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The Every-Day Diseases of Children

AND

Their Rational Treatment

BY

GEORGE H. CANDLER, M. D.

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PREFACE

This little book is not intended for the pediatrist, who has made a special study of children and their disorders, but for the every-day general practician who, after all, treats more ailing little ones and sees more of the pathological conditions which afflict immature humanity than all the pediatrists put together. It is not the pediatrist who restores animation to the cyanosed new-born; neither is it the specialist in children's diseases who soothes the colic of the first-born, attends the hope of the household when the measles appears, copes with croup in the dead of night, or removes the bean which has been deeply planted in Johnnie's nares. To relieve these and a score of other troubles is the lot of the family doctor—the much-tried man who by the exercise of much common- (and uncommon) sense brings his patients through "from the cradle to the grave."

The writer, having for many years been compelled, alone and unaided, to act as guide for a goodly number of travelers making this journey, has often earnestly sought for concise counsel and advice born of experience; but, alas, too often has found that a few facts had to be slowly and painfully extracted from masses of theory, and real help in emergencies was not forthcoming. Beautifully written textbooks he had in plenty, but upon consulting them it seemed as though the writers had entered into a conspiracy to omit mention of the very thing one wanted to know; moreover, each author having imbibed *his* knowledge from a teacher who had lived before the days of electricity, had not a word descriptive of *positive*

therapeutic measures. In the diseases of children, as nowhere else, prompt and rational medication is imperatively called for, and the modern physician who would save his practice must first and foremost save the babies. If the advice herein extended enables him to succeed where otherwise he would have failed, the book will have fulfilled its mission.

For lengthy description of the etiology and pathology of the various disorders of childhood the modern text-book may be consulted with advantage (indeed, these subjects should be constantly studied in the spare half hours), but when it is desirable to know at once what is the best thing to do for the conditions present, *then*, perhaps, this unpretentious work may prove of value.

If the measures recommended prove half as successful in the hands of the reader as they have been in those of the writer, he may expect to be kept busy, for *the man who gets results is the man who gains the practice.*

GEO. H. CANDLER, M. D.

Chicago, Ill.

TO THE DOCTOR HIMSELF

It is, unfortunately, often necessary to success to be governed by common-sense and the conditions which exist rather than precedent and rule. The practician whose hair has grown gray in harness often smiles a satirical smile as he tenderly digs up, when in a reminiscent mood, the ideas of medicine he had when he won his diploma. It is an unfortunate fact that practical therapeutics is not taught at the schools to the extent it should be. The favorite prescription which the learned professor gave the class for "rheumatism," and which has been so carefully preserved in the note-book, does not seem to meet equally the necessities of old Mr. Smith, obese Mrs. Brown and little Johnnie Jones. The text-books explain beautifully the *cause* of rheumatism. Graphic and reliable clinical pictures are presented, but, alas! the drugs recommended—salicylates, aspirin, tincture of colchicum seed *et hoc genus omne*—prove efficacious only here and there. One prescription for rheumatism is tried after another and the doctor begins to wonder, after a while, whether there *is* much efficacy in drugs after all and spends money on hot-air apparatus "and sich."

So therapeutic nihilists are born. Some day, his eyes open to the light, he realizes that while individuals differ, the changes—normal and pathological—which take place in the human body are fairly constant, and that the "*right* remedy for the conditions present" (usually given in small repeated dose to effect) *must* produce definite results. The main thing is to recognize the pathological condition and select the proper remedy; not having a single eye to

the disease but paying equal attention to the individual, while supporting in every way such normal processes as may exist and deftly aiding nature to restore order in her laboratory.

The "small-dose" man, the "large-dose" man, the "high-potency" man, each and all must fail time and time again if they allow *any fixed rule* to bias their minds when they have to decide upon the best remedy for a certain disorder in a certain individual. A large dose may be needed here to produce a profound impression; slow and very gradual drug-effect may be desirable there. In this patient a destructive process must be stayed before irreparable damage is done; in that one, though supposedly suffering from the same-named disease, such a violent attack would destroy the patient himself.

Moreover, as there must be various degrees of medication, so we must vary the medicines themselves—always, however, using that form of a drug which will in the smallest quantity produce the most even and positive effect. The *effect* is what we are concerned with chiefly; if a desirable effect can be obtained always from a definite active principle in minute dose, *then* that is the remedy of choice, for obvious reasons (and many which are not so obvious without deep thought); but if a fluid extract or specific tincture is known to be more desirable than an alkaloid, resinoid or glucoside, then *that* is the only proper remedial agent.

"How can one tell which is the best remedy for a disorder when so many totally different drugs are lauded by different people?" is a very natural question and one which has a very simple answer. That remedy is the best which in the hands of hundreds of different men in totally different places, under given conditions and in a fairly similar dosage, gives the same remedial result. A compound extolled for a group of symptoms, named

for convenience such-and-such a disease, cannot possibly be the best remedy everywhere and always, though it might meet every condition in a certain case.

The conscientious, scientific practician will then learn first of all to diagnose closely; to recognize not alone separate symptoms, but their *cause*, and will proceed first to remove that cause (if possible) and then to meet each abnormal condition with the remedy known to be uniformly efficacious. With the aid of the chemist and physiologist the modern clinician is able to understand just *why* certain definite principles exert a definite action; moreover, he is aware that with many drugs the small dose produces one effect and a large dose another. Hence, the well-read physician, using his own reasoning powers, can easily select the best remedy for each condition; he will rarely, if ever, find himself treating groups of symptoms empirically. That there is much yet to be learned is true, but the average doctor of today can, if he will, produce therapeutic results which ten years ago were practically beyond the power of the most skilful celebrity.

Some physicians will perhaps object to the constant recommendation of calomel or other mercurial; others may say: "He seems to suggest a 'clean out' in every disease imaginable."

The reason for the latter suggestion is obvious: There are few derangements of the human body which are not caused by, or to a certain extent cause, gastrointestinal disturbances. If we have the *primæ viæ* swept free from fecal and effete matter, presenting a clean, absorptive mucosa, we are restoring normal conditions—placing one of the most important working parts of the mechanism in running order. With normal conditions restored in the gastrointestinal tract we can insure nutrition of the body; prevent further absorption of toxins; feel sure that such drugs as we give will prove active, and moreover know

that the principal step toward securing a normal body-chemistry has been taken.

Once having secured therapeutically "clean" *primæ viæ*, it becomes the duty of the doctor to keep them clean—as free as possible from matter and bacteria inimical to the patient's welfare. The kidneys should also be carefully considered and made to perform their functions; the skin, which too often is neglected, must at the same time be rendered an active ally. With these conditions prevailing it is not usually a difficult matter to restore health.

If the doctor knows of a drug which in combination or alone will perform the initial "cleaning up" work better than the small, repeated dose of calomel, he has discovered something of great value to humanity and should make the fact known. Calomel is recommended by me because after patient work I have been unable to find anything half so useful—and non-injurious. Iridin serves splendidly, but better *with* calomel; and such drugs as leptandrin, juglandin, euonymin, aloin, etc., are not to be dispensed with; but not one of them (not considering compound licorice powder, jalap, castor oil, etc.—all of which are very difficult to get down) even approaches the mild mercurial when we desire to clean the intestine thoroughly and promptly. The subsequent exhibition of a saline laxative perfects the procedure.

From the above it will be evident that in treating the acute infections and toxemias the doctor will find himself, as a first step, giving calomel with iridin or podophyllotoxin and with salines washing out the bowel, while ordering sponge baths and copious draughts of thin barley water or fruit juices. Then he will destroy bacteria in the intestine with the sulphocarbolates and render the body-fluids inimical to germ propagation by saturating the system with calcium sulphide and echinacea. All

this is accomplished very simply and in two days. At the end of that time there are usually very few symptoms left to meet, and medication becomes a simple matter indeed. Let such special indications as exist be met, as hyperpyrexia with aconitine, veratrine, gelseminine or the defervescent compound; local congestions with hyoscyamine or atropine; cardiac weakness with cactin, digitalin and strychnine, and so forth—and the most dreaded disease is usually controlled *cito, tuto et jucunde.*

If the fight is severe and long the doctor will see to it that vitality is maintained and, as best he may, will provide the material for the reparative processes. Predigested foods, prepared bovine blood, nuclein—an unequaled reconstructant and stimulator of phagocytosis—these and other things are at the disposal of the most remote physician. Is it wonderful, then, that today the progressive "cross-roads doctor" (God bless him always!) is able to report results which astound those petrified theorists who still treat the sick as they were treated in the days of the stage-coach and tallow candles?

To get the best results it is essential that *drug-action* be understood. The man who gives aconitine where gelseminine is indicated loses time (and *may* lose his patient); digitalin is a useful cardiac tonic, but cactin is now known to act within the hour and to meet the indications present in *acute* diseases—especially in the heart-waverings of childhood—better than any other drug in the materia medica. But here and there sparteine, convallamarin, glonoin or strophanthin will be positively indicated. To give, then, the "*right remedy for conditions present*" the attendant must be able to recognize the latter and select the drug distinctly called for.

Time is precious to the average country physician; he should read the works of those men who are positive, progressive and practical, leaving for leisurely considera-

tion theory and pessimistic ultrascientific productions. The man who does not believe in drug efficacy has no moral right to accept a patient or give a dose of medicine. Again, the man who has so little conception of the marvelous therapeutic value of water, light, heat, electricity and properly applied motion as to imagine that drugs, and drugs alone, will always prove the best thing for the sick is quite unable to give his patients that aid which they have a right to expect.

Appliances for the therapeutic application of light and radiant heat, of vibration and electrical treatment, are today quite cheap, and a very little self-denial will enable the young practician to equip himself. One word of warning here: *Never apply the vibrator, therapeutic lamp or an electrode unless you know why you are doing it and what result you expect to obtain.* I need hardly add, "and know *how* to do it *properly*."

To get a clear conception of a patient's real condition it is often essential that the cavities of the body be explored. Today even the "saddlebag" doctor can and should be equipped with electrically lighted diagnostic instruments, such as tongue-depressor, urethroscope, endoscope and auroscope. Where current is not available these little instruments can be operated by dry batteries, and without their aid positive diagnoses are often an impossibility. Without positive diagnosis treatment *must* be empirical. Do not attempt the impossible, but before relinquishing a case ask yourself whether you really *have* reached your limit—and if you have, turn your patient over to someone else, then hasten to acquire the knowledge or dexterity necessary to meet the condition next time it presents. By following these few simple rules and doing that which the hand finds to do as well as you can do it, always seeking meanwhile to surpass yourself, you are bound to meet with *success*. And it will be *deserved*.

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CHAPTER I

PERTINENT POINTS ON PEDIATRICS

"The man is the father of the child." When peculiar conditions exist which cannot be explained readily—*examine the man.*

While the parents are "telling you all about it," watch the baby: constant crying and kicking mean *pain.*

Always have an infant fully undressed before deciding what the trouble is. A pin has caused convulsions ere this more than once.

If you have not raised babies of your own, study carefully those of others, and *never give a dose of medicine you could wish recalled.*

Inquire carefully as to the way baby is fed; and when they have told you everything, examine the bottle, milk and nipple—or the mother.

Never frighten a child; take time, tell the truth, and win the affection of patient and parent alike.

Nine-tenths of children's disorders are due to infection, external or intestinal.

Fever almost invariably means infection; it is well, therefore, to locate the seat of trouble. In infants direct your attention to the intestinal tract or orifices of the body; in older children suspect a beginning exantnem.

Never forget to examine the ear and throat carefully when fever of an obscure origin exists. Middle-ear disease or tonsillitis may occur in the very young.

Take the infant's temperature per rectum, always; never forget to wash the thermometer afterward.

Where you have charge of children see that the parents buy a thermometer—and know how to use it.

You may not know it, but acute cystitis quite often occurs in young children (girls especially) and you should not offer a diagnosis until you are quite sure that a "continued fever" is not due to such cause.

Don't be overmodest; always examine the genital organs; vaginitis or phimosis will make a very cross, restless patient.

It is *always* safe to clean out the alimentary tract and increase dermal activity. A high enema following (or even preceding) stools secured by medication often is a wonderfully active febrifuge.

Be sure that you know what the pathologic conditions existing are and meet them with the indicated remedies, "repeated to effect." The cause often may be judged only by the disappearance of the symptoms. In giving toxic drugs it is well to bear in mind that the individual tolerance alone establishes maximum dosage. If therefore the physiological action of the drug is apparent before remedial effect is obtained you must revise your medication. You have not given the right remedy at the right time.

Do not let old women lead you to believe that a fever is caused by teething. Investigation will usually reveal autotoxemia.

The baby with a "sore bottom" makes more noise than the infant suffering from endocarditis. The quiet sick child is the dangerously ill child, in the majority of cases.

Extremely high temperatures are noted early in malaria, influenza and the acute infections, late in trismus and meningitis.

In infants the chill which ushers in the acute infections often is replaced by a convulsion; or the child lies

cyanotic with cold, blue extremities. It is well to impress upon parents the impossibility of arriving at an immediate decision as to the cause of a high fever unaccompanied by other definite symptoms. It is mortifying to talk "measles" and then have to treat an osteomyelitis or axillary abscess.

You cannot begin treatment too early in the exanthemas: a case treated early and "right" is half cured already.

In small children it is well to seek the plasmodium malariæ before giving a diagnosis of malarial fever. This really applies always.

Don't forget to make inquiries as to where the child with a high fever has been and with whom he has been playing. In this way we often are able to recognize scarlatina or measles positively, twenty-four hours earlier than we would otherwise.

In the summer months we may give our attention first to the gastrointestinal tract; in fall and winter attend to the respiratory organs.

Not infrequently in true cholera infantum hyperpyrexia follows the algid stage. In such cases make sure of preceding symptoms before treating.

It may save you many an anxious hour to remember that tubercular children are apt to present temperature at intervals. The same thing applies in chronic endocarditis.

Pin your faith to the maxim that cactin will positively prevent the cardiac depression which follows the use of aconitine "to effect."

While combating a pathological process always conserve the vitality of the patient, otherwise you may lose the field of battle itself just as the fight seems to be going your way.

In obscure fevers examine the chest, always; pleuritis or pericarditis may be responsible for the high temperature.

In doubtful fevers examine the blood and urine as a routine measure. Don't make even a provisional diagnosis until you know the result.

It is well to remember that glandular fever exists and is more common than the textbooks would lead us to believe. The fever is irregular and high. If the child has enlarged lymph-nodes and fever you had better push phytolaccin and calx iodata with other indicated remedies.

In the chill-stage of malaria the thermometer, in the rectum, will show 104° F. or higher. The same thing often will be noted in convulsive seizures.

When called to a case of convulsions give chloroform and then determine the cause at your leisure. Ask questions, but make your own deductions.

Convulsions are not always due to teething or overeating, although acute indigestion causes many an attack. High temperature and repeated spasm in a child whose intestine is clean point toward meningitis.

Do not overlook the fact that rachitis first may be made evident by recurring convulsions, with some fever.

Where there are tonic convulsions of an extremity look out for Chvostek's sign—twitching of supraorbital tissues upon tapping the facial nerve at its origin. This means tetanus.

Do not omit to examine the urine when convulsions cannot be otherwise accounted for. Nephritis may cause the trouble.

Do not forget to warn parents of children with whooping-cough that a severe paroxysm may cause a convulsion.

If in a previously healthy child you find frequent convulsions and marked hyperpyrexia suspect meningitis, and do not be caught napping.

If a child has been moping and refusing his food and you are sent for to see him after a single convulsion, you may with safety warn the parents that an infectious dis-

ease is under way. Look for Koplik's spots if the patient is not immune to measles.

In incipient infectious diseases always find out which of the exanthemata the little patient has had. It will aid you in making a diagnosis.

Promptly and firmly (but very quietly) quarantine your infectious cases. It does not add to your popularity to warn the neighbors to keep away from a mild case of properly handled measles.

A thorough physical examination will reveal more than the parents can tell you. Use your ear rather than a stethoscope: it is more reliable and does not affright the child.

Never put your naked finger in a child's mouth, and in throat-infections always thoroughly sterilize the spoon or depressor you may use.

Look upon every tonsillitis as a possible diphtheria—but don't run to the extreme of using antitoxin for every sore throat.

The wise doctor leaves the disagreeable or painful part of examination or treatment till the last.

Don't mistake intestinal gurglings for bronchial rales. This has been done occasionally.

Familiarize yourself with the physical conformation of the normal child and look carefully over each patient for deviations therefrom.

It is always well to give medicine in an attractive form. Study to a degree the fancies of children, and exhibit tablets, capsules, powders or fluids, as they may prefer. A capsule filled with granules or powder and dipped into warm water may be flipped down the open throat while the child is vowing he "can't take medicine." Use diplomacy!

Impress upon parents the folly of making the doctor's visit something to dread. Carry a few knicknacks and

teach children to watch for your coming. The "dear" doctor will win out where the "dour" doctor will lose his case.

Be quite sure to remember that notched, deciduous teeth do *not* mean lues. "Hutchinson's teeth" are not noted till the permanent teeth appear. The first lower incisors usually appear at the seventh month; sometimes they show much earlier (even at birth). If no teeth are to be seen at the seventh month and the child is pigeon-breasted, suspect rickets. Any prolonged illness may cause delayed dentition, however—

Pin this to your mind: At six months, there may be, six teeth; at twelve months, twelve teeth; at sixteen months, sixteen teeth; at twenty months, twenty teeth.

Do not be in a hurry to lance the gums, but if there is necessity do so, cut to the tooth and in severe cases excise an ellipse to prevent closure.

Bear in mind that digestive disorders and teething go together. Attention to the gastrointestinal tract will render teething easier; the reverse does not hold.

Acute abdominal pains in infancy probably are due to colic. The "calmative" formula relieves tension almost immediately. In severe continuous pain referred to the abdomen palpate carefully; intussusception must be thought of. A high enema and an emetic often will put to flight an "appendicitis" or even a "strangulated bowel." N ither condition really is common and with care cannot well be overlooked.

In supposed tumors (or growths) of the abdomen empty the bladder. Do not mistake a sarcoma of the kidney for hydronephrosis.

The edge of the liver can usually be palpated in children; cirrhosis of this organ is comparatively rare, but interstitial hepatitis or gummatous enlargement may be encountered.

EXAMINATION OF THE SICK CHILD

That some men are born doctors, many are made doctors, and quite a number "die a bornin' " or are spoiled in the making, is an old saying which bears perhaps a degree of truth. The "children's doctor," however, is *born* only—he cannot be made.

The man who has a smile in his eye and a "certain way with him," can do more good by merely holding the baby a minute than the stiff, pompous or nervous clumsy practician can accomplish with a day's medication. One man's entrance is hailed by mother and sick child with equal delight; the approach of the other is heralded by the cries of an apprehensive little one and the weary expostulations of its mother. To the right man the little sick arms go out, and whatever "docky" wants done, is done, even if it does hurt.

The other fellow has to have one or two adults hold the child to enable him to look at its tongue and he shouts his orders to a frenzied woman, the while he mops his face and wonders whether he did really hear rales. When such a man tries to investigate the tonsils or palpate the abdomen the procedures resemble a free-for-all fight. That a really sick child derives benefit from the visits of this doctor is to be doubted. Hence, as mothers have a remarkable faculty for knowing what helps their little ones, the unpleasant doctor, no matter how clever, is likely to find his pediatric practice growing less.

On the other hand, the man who cures the children has the confidence and love of the mothers, and the doctor who treats the mistress of the house is very apt to take care of its master (and his dependents also) when the need arises.

It is not at all hard to win children, even when sick, but certain qualities and procedures are essential to perfect success.

First of all, *never lie* to a child; be gentle, firm and positive in action; spend a few moments "getting acquainted," and if the child is old enough, try to make his illness and the treatment a subject of interest. For instance, a child burning with fever can be told that he is "the scarlet prince" (or princess) on whom a wicked witch has laid a spell which can only be broken by the doing of certain definite things by the magician—yourself! The spell makes the tongue white, the skin speckled and the pulse quick, and if it isn't broken, the little "scarlet prince" may be very ill. Of course, any afflicted prince will eagerly aid the magician to defeat the witch, even if he has to take pills and funny stuff in glasses to do it, and will eagerly await the time when the latter can come again to see how his charms are working.

The mother is left to see that the witch doesn't get at the prince and tempt him to do what he shouldn't do, and as she usually comes in her invisible cloak and whispers, "Don't take that nasty medicine," it is very necessary that the magician should have a deputy.

This may appear trivial to the savant or grimly scientific physician, but it means a great deal to the children's doctor and his patients. I know that more than one useful life has been saved by the turning of the illness into an absorbingly interesting combat between the "wicked wizard" and myself—the patient of course being the bone of contention.

If you have to do a painful or disagreeable thing, tell the child (if he asks) that it is painful or what not, but that it is essential to success, and that other boys or girls have been through it and laughed afterward. Offer some reward for good behavior and be sure to give it. Don't promise a child and break your word. Take pains to save pain. A tube of ethyl chloride, a bottle of chloroform and a little cocaine solution will enable you to do

many things without causing suffering. Never tell a child that he will be hurt until it is necessary to do so—apprehension is bad for small people.

Be gentle and never hurry. Never cause the little one more discomfort than you must, and always present the brightest side of things.

If the patient is asleep when you arrive, then is the best time to take the pulse and temperature. Remember that in childhood the slightest thing may cause the pulse-rate to leap upward. In pneumonia the rate has been as high as 220 per minute, and the child recovered. In young children it is useless to attempt taking the temperature in the mouth or axilla; the rectum alone is reliable. Use one finger on the radial artery and desist if for any reason the child resists; wait until you have secured his confidence.

It is wise while the parent or nurse is talking to watch the child. The face tells many stories to the trained eye and the actions tell more. A quick respiration—even if there is some temperature—need not lead to the diagnosis of lung-involvement; all sick children breathe quickly and we must look for whistling, sighing, labored or "catchy" breathing before suspecting disorder of the respiratory organs. The normal ratio of pulse to respiration in children is 3 or 4 to 1. The sitting or standing child breathes more frequently than the recumbent. If we note a respiratory rate of 40 or 50 to a pulse-rate of 120 to 130, then we had better examine the chest thoroughly. During dentition respiration is likely to be markedly increased. It is not till the tenth year that abdominal breathing ceases. Girls are more likely to present costal breathing.

A child who has been frightened may present all the evidences of infection, but after sleeping a few minutes, temperature and pulse will sink to normal. It is worth

noting that in children suffering from fever the difference in morning and evening temperature is especially noticeable.

Never give a child a full dose of an antipyretic till you have examined the heart and learned something of its history. Collapse may follow such medication in children with a weak heart or those prematurely born.

Take pains to find out just what the patient has been eating and ascertain positively his whereabouts for the past day or two, in fact, get all the information you can relative to the case, but unless you have an infant to deal with, do your talking out of earshot.

Always auscult before percussing the chest and try not to use instruments on your first visit. In children the heart-sounds are much louder than in adults and may be heard over the back and abdomen. The apex-beat is outside the nipple-line and the first sound is equally clear at the arterial and venous orifices. From birth till puberty there is no accentuation of the second sound. It is not advisable to auscult while the child is crying, although bronchophony may be revealed when infiltrated areas are deep seated. All sounds are louder on the right than the left side, and "puerile breathing" is noted after the sixth month. The inspiratory sound alone is heard plainly in small children, the expiratory being almost indistinguishable. Between the scapulæ bronchial breathing is normal; if heard anywhere else it is pathological.

Be sure that rattling of mucus in the nose, etc., is not mistaken for rales. It is well to have the child sitting erect when percussing. If it is on its back the depressed thoracic walls cause dulness; if on its abdomen the diaphragm and intestines are pushed upward and impede full respiration. The child may lie first on one side and then on the other, and the thorough examination of the lateral walls should not be overlooked.

No experienced man will percuss the heart in a seriously sick child; we can learn all we need to know without endangering the patient. That great changes take place in the area of cardiac dulness between the first and welfth years should be understood. At one year old dulness (absolute) extends to the third rib along the sternal border and as a rule does not extend to the mammillary line.

At six years absolute dulness begins at the upper border of the fourth rib and the lateral boundaries are displaced one centimeter to the median line. At twelve the dulness and conditions generally are those observable in adults. Anemic murmurs however are rarely heard in childhood. As it is a very difficult thing to ascertain the exact size of the heart in children it is advisable in serious cases to employ the x-ray.

In tedious examinations of the body-cavity give a few drops of chloroform; this is preferable to a struggle. In ordinary examinations of the nose, throat, etc., most children will submit after they have seen someone else "perform." The finger will tell most things you want to know about the rectum and you need not scare the child with a speculum. If you show a child the workings of an auroscope or electrically lighted tongue depressor, etc., as applied to yourself, he will be eager to have it used on himself also.

Make your suggestions regarding medicines and food outside the sick-room, but don't forget to ask the little one what he would like best, promising he shall have it if permissible. If it is not, say nothing. Take some care to make your medicines acceptable and impress upon the child their importance.

FEEDING OF THE INFANT AND CHILD

The best food for the infant is mother's milk, but too often in these days mothers are unable or unwilling

to nourish their offspring. The doctor should impress upon women the grave injustice of refusing the breast, and where milk is of low grade or lacking, he should advise for the mother plenty of nutritious, milk-forming food. Malt extracts, the extract of galega vera, and plenty of milk and cream, together with gentle massage of the mammæ, will improve the output both as regards quantity and quality.

It is not possible here to go into the minutiæ of artificial feeding, but the practician who has charge of but three babies yearly owes it to them to familiarize himself with the chemistry of milk and the whole subject of infant feeding. Chapin's "Theory and Practice of Infant Feeding" is an excellent work and thoroughly up to date. Griffith's "The Care of the Baby" also is well worth frequent perusal.

The physician must understand that sometimes the mother's milk is almost without nutritious qualities and the baby starves amid plenty. Again, it is too rich, and vomiting and colic follow. It is an easy matter to test breast-milk, which should contain approximately 3.5 fat, 1.5 proteids, and 6.3 sugar. Cow's milk of good quality averages, fat 4.0, proteids 3.5, sugar 4.5. Excess of proteids and sugar renders plain cow's milk altogether too rich for the infant. The fat in mother's milk is in excess of that in cow's milk and there is more albumin, that is, in woman's milk there is 61.5 percent casein and 38.5 albumin; good cow's milk yields 85.7 percent casein and only 14.3 percent albumin. However, failing the natural food, modified cow's milk properly prepared and kept offers the safest nourishment.

Modified Milk.—There are any number of formulæ for modified milk, but in by far the majority of cases the simplest way is the best. Secure one day's milk and stir well, then to a child of three months or under give

one-fourth milk to three-fourths water (boiled). A child of six months will require half milk and half water, and at nine months it may take three-fourths milk to one-fourth water; at twelve months pure milk may be given. Thus we diminish the amount of proteids, and if we wish to increase the proportion of sugar we can add sugar of milk to suit conditions.

However, it is impossible to outline any fixed scheme for feeding, for one child will demand richer milk at three months than another will tolerate at nine; hence the necessity for the physician being able to recognize and meet individual necessities.

After the third month I use barley water to dilute the milk, thus providing the organism with needed salts. A minute proportion of salt may be added to the barley water. Cane-sugar should never be used if it is possible to avoid it, and condensed milks are an abomination. Evaporated milk is an entirely different substance, representing a high grade of cow's milk from which the watery elements have been removed by evaporating in vacuo. The good brands are sterile, absolutely unadulterated, and, diluted with water and sweetened with milk-sugar offer an ideal food for sick children or those who have to be artificially fed in localities where there are no cows. As a matter of fact, I would rather feed my babies on evaporated milk than on most of the milk sold in cities.

Barley water may be made from prepared barley flour in a few minutes, directions accompanying each package. Made thin, it offers a safe, nourishing drink for babies in hot weather, and at the slightest sign of bowel trouble it should be substituted for milk for, say, twenty-four hours. An excellent table is appended from Spach's work on "Infant Feeding." In cities milk comes in bottles in which the cream rises. "Top milk" therefore means the rich milk from the top of the bottle.

TABLE OF PERCENTAGES AND INGREDIENTS

From the top of a quart bottle of milk twelve to sixteen hours after milking,

Infant's Age		—Take— Fat	Proteid	Milk Sugar	To Which Add— Boiled water or other dil'nt	Am't fed daily	Am't at each feeding	Frequency of feeding
1st, 2nd and 3d days	Ounces	½		½	9½	10	½ to 1	Every 2 hours during day and twice at night
	Per cent	2	.20	5				
4th, 5th 6th and 7th days	Ounces	1		½	11	12	1 to 1½	Every 2 hours during day and twice at night
	Per cent	2	.30	5				
Second Week	Ounces	2 from top 9		¾	14	16	2	Every 2 hours during day and once at night
	Per cent	2	.50	5				
Third and Fourth Weeks	Ounces	3 from top 9		1	17	20	2½ to 3	Every 2 hours during day and once at night
	Per cent	2.25	.60	5				
Second Month	Ounces	4 from top 9		1	20	24	3 to 3½	Every 2 hours during day and once at night
	Per cent	2.50	.66	5				
Third Month	Ounces	6 from top 9		1½	24	30	3½ to 4	Every 2½ h'rs during day and once at night
	Per cent	3	.80	5				
Fourth Month	Ounces	0		1½	27	36	4 to 4½	Every 3 hours during day only
	Per cent	3.75	1	5				
Fifth Month	Ounces	15		2	25	40	5 to 5½	Every 3 hours during day only
	Per cent	3.75	1.50	5				
Sixth Month	Ounces	20		2	22	42	5½ to 6½	Every 3 hours during day only
	Per cent	4	2	5				

—*A. B. Spach, A. M., M. D.*

After feeding, a child's mouth should be washed out with mild boric-acid solution. The breast-fed infant should have the same care. The mother's breasts require equally careful attention.

One of the most essential points is regularity in feeding; the amount of food consumed also is important. The healthy child at the breast will not as a rule take more than he requires, and sleep follows repletion. The child fed by bottle, however, lacks the warmth of the breast and often cries when his bottle is emptied and as a result gets more food. This is *never allowable* al-

though quite often a little water may be given with advantage. Between feedings pure, cool water should be given —two or three spoonfuls will be enough.

After the child is eight or ten months old it is well to allow it once or twice daily either a thin predigested gruel, fairly thick barley water, oatmeal water, or even albumin water (the white of an egg stirred slowly into eight ounces of water and sweetened with milk-sugar).

There are many artificial digestants, but Cereo has given me the best results, with cereal gruels. A thin barley flour gruel to which this preparation has been added may be mixed with half the amount of milk and given to even a delicate child with good results. The infant whose assimilative capacity seems to be *nil* must receive the most watchful care, and experience alone will enable the physician to outline its diet.

The Advantage of Written Instructions.—Nurses (and some mothers) are proverbially careless and the doctor should give in each case a slip containing exact directions as to the kind of food to be used, amount, frequency of feeding and method of preparation. The following is a reproduction of the slips provided in Spach's "Handbook" and fully meets the requirements:

.....190....

FOOD MIXTURE

For .....

The milk should be from a herd of healthy cows; and the milking done in sterilized quart glass bottles. The bottles should at once be sealed and cooled to a temperature of 40° F., and maintained there.

A From the top of a quart bottle of

milk sixteen hours after milking, TAKE $\frac{1}{4}$.....ounces

B From the top of a quart bottle of milk sixteen hours after milking, dip out NINE ounces. Stir these

nine ounces, and from them TAKE[1].....ounces

Boiled water .....ounces

Barley water, dextrinized .....ounces

Oatmeal water, dextrinized .....ounces

Wheat water, dextrinized .....ounces

Lime water .....ounces

Albumin water .....ounces

Whey .....ounces

Milk sugar[2] .....ounces

.....

.....

Put the mixture in as many graduated nursing bottles (cylindrical) as will be used in twenty-four hours, stopple with baked cotton, put in the ice chest, and keep at a temperature of 45°–50° F.[3]

Warm each feeding by placing the nursing bottle containing the amount to be fed at one time in a deep tin cup of hot water. To test the temperature of the feeding, pour some in a spoon and taste. Do not place the bottle to the lips.

Feed the baby ..... ounces every .....hours during the day from 5 a. m. to 10 p. m., and ..... during the night.

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1 The first ounce is dipped out with a teaspoon; the other ounces with a dipper. A dipper of one-ounce capacity is readily constructed of tin by any tinsmith, and should be one inch in diameter, 2½ inches long, and cylindrical in shape. To its open end, a wire 8 inches in length is soldered lengthwise to the dipper.

2 Two level tablespoonfuls of cane sugar, or three of milk sugar equal an ounce.

3 To pasteurize or sterilize (if physician so directs): The bottles prepared as above are placed in a tin pail upon whose bottom is an inverted tin pie pan. Fill the pail with cold water to the level of the milk in the bottles. A thermometer, through a cork fitted in a hole in the cover, passes into the water. Heat to a temperature of 165° or 212° F. Remove and cover with several layers of clean cloth for twenty minutes. Put in ice chest.

Hold the baby in the arms in the semierect position, and the bottle for it, when feeding it. Allow fifteen to twenty minutes for each feeding. Throw away the food the child does not take during the feeding.

The nipples should be of black rubber with a single small hole. Immediately after using, they should be turned inside out and cleansed with hot borax water. When not in use they should be placed in a cup in which there is borax or soda water (teaspoonful to pint of boiling water). Rinse the nipples in boiling water each time before using. The bottles, before being filled with the food mixture, should be filled with water, placed in a kettle with water and boiled for fifteen minutes. All utensils used in preparation of the baby's food should be scalded with boiling water each time before use. The hands of the attendant should be carefully washed with soap and warm water before the preparation, or the serving of the food.

Give no patent medicines for colic or constipation, and no medicines or foods except on the advice of the physician. Heed no advice for feeding the baby except that of the physician. As the child grows older, its taste should not be perverted by giving it cake or candy.

Give the baby from one to four teaspoonfuls of boiled water several times a day.

Barley water from pearl barley.—Take two tablespoonfuls of barley and let soak for a few hours, or over night in water. Throw away the water, and boil continuously for six hours, keeping the quantity up to a quart by adding water. Strain through coarse boiled muslin, and put in ice chest or cool place.

Oatmeal water and rice water are prepared in same manner.

Oatmeal, barley or wheat jelly can be prepared by cooking to one pint and straining, instead of keeping the quantity to one quart.

Barley or wheat water (gruel) from flour.—Take two tablespoonfuls of barley or wheat flour and a quart of water, put in a double boiler and cook for one hour.

To dextrinize barley, oatmeal or wheat water, add a teaspoonful of malt extract to a quart of either, when sufficiently cool to be tasted. Stir carefully and put in ice chest, or set aside, if for immediate use.

Whey.—One pint of fresh milk is heated gently warm. Add two teaspoonfuls of essence of pepsin or liquid rennet, stir thoroughly and let cool. Break the curd with a fork, and strain through two layers of boiled cheese cloth.

Albumin water.—Take white of one egg, one-half pint of cold boiled water and a pinch of salt. Stir without beating. Feed cool.

Beef juice.—Broil piece of lean beef slightly, and press the juice out with a meat press, or lemon squeezer.

Lime water.—Pour two quarts of hot water upon a piece of unslaked lime size of a walnut in an earthern jar. When slaked, stir thoroughly and let stand over night. Pour off liquid and put in bottle.

CLOTHING, BATHING, SLEEP, EXERCISE:

.....M. D.

It is safe to say that if a baby grows normally and passes normal stools his food agrees with him. If the stools are abnormal or the child fails it is necessary to examine the food and supply deficiencies.

Average Weight of Infants.—The child should be weighed frequently. At birth it will weigh from six to nine pounds, eight being the average, and during the next day or two will lose ten percent of its weight; then he begins to gain. For the first six months the child should increase in weight three to four ounces weekly, after that the gain is slightly less. At twelve months the normal child will weigh three times as much as he did at birth; at the end of the second year he will weigh six pounds more; in the third he should pick up five pounds, and in the fourth as much, almost.

Proper Feeding Better than Medicines.—The correctly fed child is not apt to suffer from either constipation or diarrhea; neither is he so likely to have thrush and various other infections of the gastrointestinal tract. Overrich milk (mother's or cow's) is responsible for much sickness. Here we can either reduce the mother's diet (cutting down proteids) or modify the cow's milk, lessening the fats and sugar. Where the child does not gain weight and yet gets an abundance of milk from its mother, a careful analysis will usually reveal the lacking element, and then by proper feeding of the mother the child will benefit.

One thing it is well to bear in mind: Many women menstruate after a few months and still suckle their child. In not a few cases serious gastrointestinal disturbances then present in the infant. It is well to take the child from the breast and feed artificially, having the breasts emptied with a pump. Not infrequently it is best to wean the child entirely when menstruation appears, especially if it is seven or eight months old.

If the mother is constipated the child is likely to be. Give the woman cascara at night and saline each morning, and let the baby have a little oatmeal water to drink between meals. If on the bottle, dilute the milk with oatmeal water. Do not give atropine, morphine or other toxic drugs to a nursing woman.

Occasionally we find an infant unable to assimilate cow's milk, no matter how carefully it may be modified. Such children often thrive upon evaporated milk (or evaporated "cream" as it used to be termed) or some one of the many artificial foods upon the market. Eskay's albuminized food often is acceptable to infants who fail to digest (or even retain) milk and, again, Mellin's food may prove superior to everything else.

Frequent changes of food, especially in the hot weather, are sometimes disastrous, and it often is best to stop all food (except barley water) for a day and meanwhile clean out thoroughly the *primæ viæ*, returning then to the food hitherto used in small amounts. Regurgitation of part of the meal may mean overloaded stomach, *not* improper diet. Vomiting of curds often may be checked by the addition of a little lime water to the food, and a few moments' study of conditions and the food used will enable the physician, in nearly every case, so to modify it as to prove satisfactory.

Tubercular Women Must Not Nurse Infants.—The tubercular mother may bear a sound child but she should not *nurse* it. If a healthy wet-nurse can be procured, so much the better, otherwise good pasteurized or modified milk will prove safest. Markedly anemic women and, women under treatment with potassium iodide and mercury should not nurse their offspring. Sometimes a young, delicate mother begins to lose flesh and color after nursing a week or two. If improved diet and a simple tonic fail to stop the decline, the infant should be weaned.

Diet in Second Year.—The year-old baby begins to need more than milk, although as a matter of fact more care is required then than at any time. Summer diarrhea is likely to attack the little one in his second summer, and only too often improper feeding paves the way for infection. Milk still should form the main article of food, but with it the baby may have a cereal (well cooked), clear meat broths, crackers, zwieback, eggs and a little well-cooked fruit. The habit of feeding the child at the table from the family menu is to be condemned strongly.

For the first six months the following would be an ideal dietary: On awaking, the regular amount of modified milk. If the child arises very early he may have another feeding at 7 or 8 a. m. Or a gruel may then be given or a zwieback with a little yolk of egg or fruit juice. At 10 o'clock the regular amount (eight ounces) of milk or thin gruel. At 1 or 1:30 p. m. a cup of beef, veal or mutton broth with cracker crumbs, or an egg with stale bread. A little fruit is allowable after the fourteenth month. At 5 p. m. eight ounces of milk or gruel, and the same food at ten. Between these last meals orange juice may be given if the child is constipated, or the syrup from figs and prunes, slowly cooked (one pound in a quart of water). One to two teaspoonfuls of either suffices.

After the eighteenth month the diet is gradually varied. However, till two years old, milk should be the staple at most meals. Scraped or minced beef, mutton or chicken, ripe fruit, free from seeds and skin, well-cooked fruit, stale bread, whole-wheat food (shredded wheat, wheat flakes, etc.), mashed, boiled or baked potato, rice, cauliflower, asparagus, spinach, etc., afford a plentiful variety. As desserts, sago, tapioca, custard, rice and similar puddings (with or without fruit) are safe. Junket is admirable in summer and buttermilk gives strength. By the time

a child reaches the age of six it will be able to eat practically anything its mother *should* eat. Meat should only be given at the noon meal and nothing whatever within two hours of bedtime.

Unless the child has a peculiarly poor appetite, nothing should be allowed between meals. Some delicate children require a light lunch between breakfast and the noon meal. Easily assimilated food should always be chosen and exercise taken afterward.

Other suggestions as to feeding will be found under the head of "Treatment" of the various diseases.

CHAPTER II

DISEASES OF THE NEW-BORN

From the moment of birth the infant requires more or less attention of a medical nature. His entire future welfare depends upon the proper tying of the cord and cleansing of the eyes; and if by any chance abnormal conditions obtain the attending physician must be prepared to correct them then and there.

The Care of the Eyes.—In these days of asepsis the well-posted practician will take care to carry a sterile bobbin in a glass tube and a sealed package of gauze for the umbilical dressing. In his satchel, too, will be a vial containing a solution of silver nitrate or icthargon for use in the eyes. As soon as the head is born the eyes should be gently wiped off with a solution of boric acid, ten grains to the ounce, and as soon as the child is delivered entirely, the lids should be gently separated, the fingers being covered with sterile gauze, and a few drops of a silver nitrate solution (grs. 10 to the ounce of distilled water) or icthargon (grs. 5 to the ounce) allowed to flood the conjunctivæ. The excess of fluid is removed with a little cotton and if silver nitrate has been used the eyes are flushed gently with a solution of sodium chloride.

It should be borne in mind that the mucosa and skin of the newborn babe are particularly sensitive and extreme gentleness is requisite. It is well to impress upon the nurse the fact that she may easily infect the eyes by touching them with unclean hands; after attending to the

toilet of the mother she should not only wash them thoroughly but should cleanse her finger-nails carefully with a toothpick and cotton.

GONORRHEAL OPHTHALMIA NEONATORUM

This condition is not at all uncommon among the poorer classes; the steps above described will often serve to prevent infection, but when it occurs great care must be exercised. The unaffected eye should be sealed, an opening being left at the outer angle. A piece of sheet-lint is cut slightly larger than the orbit and the edges sealed down with collodion. Every other day the eye may be examined and cleansed. The writer has used, with satisfaction, the common celluloid vaccination shields. With these the eye can be inspected easily at all times. The second day of life we find, in infected cases, marked tumefaction of the lids, with reddened conjunctivæ and the secretion of a thin, yellow discharge. In most cases both eyes are involved, but if one side alone presents these symptoms prompt care will limit the disease. In a few days the matter discharged becomes thick and purulent and the infected conjunctivæ appear much like red velvet.

Treatment.—Improperly treated, perforation of the cornea results and blindness is certain. Every two hours the eye must be cleansed with small pieces of cotton (which should be immediately destroyed) and thoroughly flushed with a solution of boric acid and zinc sulphocarbolate, 10 grains and 2 grains to the ounce, respectively. A drop of a 0.5-percent solution of physostigmine may then be instilled. For some time I have instructed the nurse to remove the pus on cotton twisted about a match or sliver of wood; a small pair of forceps also may be used. If the fingers can be kept from contact with the pus, it is desirable that they should be.

Over the eye is placed a cold boric-acid compress (5-percent solution, iced), which is changed frequently. If the cornea is involved (late treatment), after a thorough cleansing, as above described, instil silver nitrate solution daily, using at first a one-percent solution and gradually increasing to 3 percent. Never use this solution unless suppuration is marked and the cornea involved. Invariably wash out the eye with the sodium chloride solution. Ichthyol solutions are almost as serviceable as those of silver and far safer. A 5-percent ointment will often control the condition promptly. In one desperate case I used formalin (one drop of the 40-percent solution to 100 of water) twice daily, following with a compress wrung out of a 2-percent ichthyol solution, and inserted into the eye a piece of ichthyol ointment at night. This patient recovered in ten days.

In some cases the secretion persists for two or even three weeks, but when it does, treatment is inefficient. Always attend to the bowel in such cases and give 1-10 grain of calomel every other night. As the discharge lessens, increase your vigilance and run no risk of infecting the other eye, which may be uninfected, and take proper precaution for the protection of other members of the family.

Perhaps success depends as much upon thorough irrigation of the eye with the 4-percent solution of boric-acid as upon anything else. A small vessel may be filled and placed a foot or two above the child lying on the nurse's lap. A rubber tube acts as a syphon, and into the proximal end the glass barrel of a dropper is inserted. The lids being everted, the fluid can be carried over the entire orbit from the inner canthus with ease. If any elevation of temperature presents, a few doses of aconitine (gr. 1-134, to water, oz. $\frac{1}{2}$, giving 30 drops every two hours) will be indicated.

CARE OF THE UMBILICAL STUMP

The use of a sterile bobbin, or better, aluminum bands, being assumed, the stump is dusted well with any good desiccant (bismuth-formic-iodide, campho-phenique, dermal antiseptic, or guaialin) and covered with a pad of cotton and gauze. The right way to dress the stump of the umbilical cord is easy enough and yet it is often improperly handled.

Make sure your ligature is tight; see that the raw edges and surrounding abdominal surface are well covered with powder; take a double piece of gauze, three by four inches, and in the center cut a hole. Through this the stump is protruded and the two *sides* are folded in snugly, covering the severed surface. Dust again and apply a wad of sterile cotton and fold down the *ends*. Run a turn or two of gauze bandage around the abdomen and apply binder. *Do not allow the nurse to wash or even wet the umbilical region till desiccation has taken place.* If you are not familiar with the nurse's method, watch the first washing. For proper procedure see any good work on obstetrical nursing.

The ordinary infant will be found to shed the desiccated fragment of the cord about the fifth or sixth day, and the dressing should not be disturbed until then unless signs of discharge are apparent. The attending physician should keep a vigilant eye upon the dressing, removing it himself if it seems necessary. If infection does occur, the parts should be thoroughly dried, and after painting with a 2-percent solution of silver nitrate, covered with a good powder and clean cotton. This procedure should be repeated twice daily till the stump falls. Then a mild boric-acid or carbenzol ointment is to be applied for a few days. An infected cord means a careless doctor or nurse.

PREMATURELY BORN INFANTS

Children may live at seven months, weighing two and one-half to three pounds, but great care with them is requisite. The infant should be wrapped in cotton-batting and then placed in a shawl with several hot-water bottles about it. An artificial incubator may be made by filling a small wash-boiler with wool and a blanket, on which the cotton-wrapped infant is laid, and then well covered. The small boiler is then placed in another larger one, the space between them being filled with hot water. Milk from the mother's breast is fed slowly with a dropper every hour or two. If there is no milk, cow's milk one part, barley water two parts, and 10 percent sugar-of-milk solution two parts, may be used. At the earliest possible moment the child must be placed in an incubator. The main difficulty lies in maintaining an even heat of 98 degrees, which is essential.

Where premature birth is probable, an incubator should be in readiness and a trained nurse on hand. The few hints given will enable the physician in an emergency to care for the infant till proper steps can be taken. In a few instances premature infants refuse to swallow. In that case a small catheter is passed through the nose and the milk poured into the stomach through a funnel.

PULSE, RESPIRATION AND TEMPERATURE AT BIRTH

The normal infant at birth has a pulse-rate of 120 to 150, its respiratory rate is 30 to 40 per minute, and the temperature (per rectum) 95° to 96° F., which, in a few hours, rises to 99° F. Breathing at first is shallow and abdominal. In many infants slight inspiratory retraction will be observed at the edge of the ribs over the diaphragmatic insertion; this is persistent in rachitic children.

EXAMINATION OF THE NEW-BORN

The child's eyes and umbilicus having received attention (the mouth has of course been cleansed early), the physician should examine carefully for abnormalities. The anus receives attention (it may be imperforate), the ears are noted (there may be adhesion to the head), and the fingers and toes should be examined. It is well, also, to explore carefully the genitalia. Dangerous distension of the bladder may follow an occluded urethra.

ASPHYXIA NEONATORUM

The child is cyanosed and does not breathe; the eyes appear congested; the heart-beat can be distinguished but faintly; the umbilical vessels are full. Prompt treatment will always restore vitality.

Clear the mouth with the finger, cut the cord, allowing about an ounce of blood to escape, and slap the child briskly on the chest and buttocks with a wet towel, or plunge him into a hot bath and sprinkle cold water along the spine. Artificial respiration may be tried if these steps fail; but they rarely do. A whiff of ammonia (*be careful!*) sometimes will prove instantly effective.

In *asphyxia pallida* the danger is great. Apnea is complete, the face is pallid, the muscles and vessels flaccid, the heart-beat is undiscoverable. Here we may try direct insufflation (mouth to mouth) or pass a catheter with great caution into the trachea, breathing with regularity therein and expressing the air by pressure on the thorax. Traction of the tongue may be tried also, or the child may be grasped by the feet and swung downward from above the operators' head. Glonoin, strychnine, and cactin may be injected hypodermically (gr. 1-134 of each drug will not prove too much). Perhaps dilation of the anal sphincter is as efficacious as anything. Relapses

must be guarded against. Keep the child very warm, but let it inhale fresh air.

ATELECTASIS

The child may be premature or have been delivered after much difficulty. It appears cyanotic or icteric, and upon examination the pulse is found slow and feeble and respirations sighing and rapid. There is an almost continuous feeble crying, even at the breast; nursing will not still the whine, which persists until sleep comes. The temperature is as a rule two degrees subnormal and a dull note is elicited upon percussion of the chest-wall. Unless death is to claim the infant, constant care is required. Hourly feeding and artificial warmth (hot-water bottles) will do much, but it is sometimes necessary to practice artificial respiration two or three times daily. Brucine, gr. 1-134, and small doses of cactin, gr. 1-134, give good results, while fresh beef-juice (five to ten drops q. i. d.), with massage over the body, will prove helpful. *Hot* baths morning and night and enemas of warm salt solution (decinormal) aid markedly. The child must not be kept for any length of time in one position, as stasis may occur.

UMBILICAL HEMORRHAGE

The fatality which attends this condition is ghastly. Excluding those cases which are due to careless tying, or sepsis, the accoucheur will occasionally encounter true idiopathic hemorrhage, due possibly to syphilis, hemophilia or Buhl's disease. Here a constant oozing is noted, even before the cord drops, and every step taken proves in vain.

As a first step, iron-alum or stypticin may be applied, and firm pressure made with a conical plug, dipped in collodion. If this fails, the surface may be touched for

a second or two with a sponge dipped in boiling water. The actual cautery occasionally has saved life. In certain diseased conditions it is useless to attempt to close the vessels. Deep ligation or transfixion with long steel glass-headed pins may be tried. One pin must transfix the abdominal wall below the umbilicus so as to occlude the hypogastric artery while the other is inserted above, thus occluding the umbilical vein. Before inserting pins, make digital compression so as to insure the absence of a coil of intestine. Digital pressure with a piece of ice for ten minutes prior to transfixion should be tried.

In less serious cases, where hemorrhage comes on at the separation of the cord or from trauma, make pressure with the thumb wrapped in gauze with ice under it. Have some plaster paris made into a stiff paste and when ready apply iron-alum, stypticin or Monsel's solution and then pour the plaster into the depression, promptly placing over it a wad of cotton and a bandage. Atropine, gr. 1-500, is given to relieve the vessels locally. Gelatin solutions and calcium chloride may be given freely to hemophiliacs. In some cases adrenalin might prove effective applied in 1 : 1000 solution on a plug.

INFECTION OF CORD (OMPHALITIS)

This condition should never present and will not in clean practice. After the cord falls, the part remains wet or crusts form, under which a thin, purulent secretion gathers. From this condition other more serious disorders may arise: phlegmonous, erysipelatous or gangrenous omphalitis. Rarely diphtheritic infection follows, which is usually fatal.

In the *simple form* cure follows thorough cleansing with hydrogen dioxide (pure) and a weak creolin solution. The part may then be painted with pure oil of turpentine

and covered with a layer of gauze over which several thicknesses of bichloride gauze may be laid. Or aristol may be dusted on thickly (I should prefer to apply gauze saturated with euarol), or boric acid and starch may be used. One or two applications of pure carbolic acid, followed by alcohol, usually will put an end to the erysipelatoid and gangrenous varieties.

In the *phlegmonous form* there is a conical, red, glossy projection which is intensely painful. Fever sometimes presents together with costal breathing and rapid pulse. The condition may spread or pointing occur; in the latter case incision and a thorough washing out of the cavity with a creolin solution will be necessary. Then dress with any good antiseptic. Carbenzol will prove efficient, or boric acid (4-percent), salicylic acid (4-percent), or mercury bichloride (1:5000) solutions may be applied upon compresses. The clay pastes of the market should be tried wherever obtainable. In my next case I should use unguentum Credé (colloidal silver) freely and inject into the phlegmonous area four to eight drops of pure carbolic acid. Nuclein should be given freely, and if pus forms calcium sulphide, gr. 1-6 every hour. Nutrition must be maintained by appropriate concentrated foods and elimination stimulated by warm enemata and bathing.

In all but simple cases give a guarded prognosis. Occasionally we meet a peculiar form of infection in which, although the umbilicus may appear normal (occasionally any one of the conditions described may obtain), there is profound systemic sepsis: the child presents high temperature, moans, loses flesh, refuses the breast, and dies in collapse.

Pneumonia, peritonitis, or any one of a score of intercurrent diseases may manifest themselves, but death really is due to umbilical infection. Rarely, indeed, can

we save such patients, but we must meet the conditions existing as best we may.

ICTERUS NEONATORUM

This, in its simple form, can hardly be looked upon as pathological, a large percentage of infants presenting more or less jaundice after birth. The cause is not yet definitely settled. For theories the reader is referred to the textbooks.

A few doses of calomel, gr. 1-10, and podophyllotoxin, gr. 1-67, followed by an ounce or two of a sweetened solution of magnesium sulphate will clear up the skin. I give four doses of gr. 1-10 of calomel with aromatics (hourly intervals), adding the podophyllotoxin to every other dose—usually selecting the evening hours—and give the saline draught next morning in the bottle.

During the next two days I have the mother give chionanthin gr. 1-6 every four hours, flipping the granule into the child's mouth before giving the breast, and repeat the mercurial on the third night. One week suffices to produce a white baby.

The daily bath may well contain half an ounce of magnesium sulphate to the quart of water, while the bowel should be flushed daily with decinormal salt solution at body temperature.

MELÆNA NEONATORUM

This is a rare disease and fully forty percent of the patients die within three days. The child passes blood in masses both from mouth and rectum and rapidly sinks. It should be wrapped in flannel and given every hour, one drop of tincture of ferric chloride in water alternated with ergotin, gr. 1-6. Nuclein, 6 drops, may be given under the tongue every three hours. Per rectum we may give one dram of fluid extract of calendula and one dram of

extract of hamamelis in 8 ounces of water, making pressure upon the anus. Hamamelis might well be tried internally, and a small dose of atropine given hypodermically. Constant feeding (small quantities) with a dropper or spoon will be required. The mother's milk or modified milk will be used, as has been the custom hitherto. A light ice-bag may be placed over the abdomen, the extremities and thorax being kept warm meanwhile.

EPIDEMIC HEMIGLOBINURIA
(Winckel's Disease)

In this rare and fatal disease the infant passes brown urine loaded with hemoglobin, casts and epithelium. There is marked restlessness, and the breast or bottle is refused. Occasionally diarrhea and vomiting occur, but usually the child dies in collapse or convulsions. Unhappily, no treatment has proven of use. Small doses of arbutin and triticum repens might well be given together with barley water, while injections of strychnine and digitalin might be tried. Nuclein also is suggested.

TETANUS

This is another rare infection. The symptoms are too well known to need description.

Proper care of the umbilicus and the avoidance of exposure to cold are the main prophylactic measures. In infants who are circumcised early or who undergo operation for imperforate anus, etc., great care must be taken to avoid infection of the wound. The tissues of infants possess little or no resistance. It should not be forgotten, however, that any severe jar of the spinal cord or a blow upon the head may produce trismus.

The first essential, when tetanic symptoms appear, is to place the child in the dark, securing perfect quiet. If a wound exist, open it widely, exposing it freely to the air, since the germ does not thrive in the presence of oxy-

gen, of course securing as nearly aseptic conditions as is possible. Inunctions of colloidal silver or better, intravenous injections, should be made. If available, antitetanic serum may be employed, the earlier the better. Physostigmine, gr. 1-1000, or cicutine, gr. 1-134, every three hours will control spasm, although enemata of chloral hydrate may have to be given. Warm epsom-salt baths and copious enemata will help the system eliminate the toxins, while nuclein and prepared ox-blood (sanguiferrin, bovinine, etc.) will increase resistance. The prognosis depends upon the severity of the infection. It is not good, as a rule.

ERYSIPELAS NEONATORUM

Always a serious matter, erysipelas becomes grave when the infant is attacked. Locally the affected area should be painted with pure carbolic acid, neutralized after one minute with alcohol. Be sure to paint well over onto the sound skin. Internally give a few doses of calomel followed by a saline draught. Wash out the bowel with warm salt water, and exhibit every three hours pilocarpine, gr. 1-250. Give one drop of tincture of ferric chloride, well diluted, every four hours. Nuclein, 6 drops under the tongue t. i. d. If the case is seen early and the treatment bold, complications are not likely to occur. If collapse occurs, use camphor and push brucine.

ERYTHEMA NEONATORUM

Two or three days after birth some infants present a bright-red skin which may appear somewhat shiny and tense. In some cases the temperature rises a degree or more. The child is likely to refuse the breast and is restless. As just such symptoms (apart from the erythema) may usher in any of the acute infections (which, however, do not commonly affect the newborn), the doctor should

watch the case closely. A granule of iridin (gr. 1-6) or two tablets of calomel with aromatics (gr. 1-5), followed by an ounce or two of a sweetened solution of magnesium sulphate, in addition to a liberal application of the ointment of zinc oxide, or of carbenzol one part, with cold-cream two parts, will prove all the medication required. In twenty-four hours all symptoms will have disappeared. If a more serious condition exist, further evidence will be noted.

DERMATITIS

Various forms of dermal irritation afflict the infant in arms. One of the troublesome varieties is dermatitis exfoliativa, in which the entire cutaneous surface suffers.

Bottle-fed babies are more subject to the disorder than those at the breast, and the disorder occurs usually when the child is four to six weeks old. Some writers call the condition pemphigus (which it is not), while many young practicians are prone to look upon the patient as syphilitic.

First of all, the corners of the mouth appear reddened, then the face is affected, and branny desquamation takes place. Occasionally the buccal mucosa and lips suffer somewhat. In a day or two the erythema spreads over the trunk and limbs and here and there aphthæ and rhagades may be noted. In the parts first affected patches of skin are being shed, while about the body are noted oozing raw areas or small vesicles which break and scab over. Unless properly treated, these children may suffer severely for weeks—or, secondary infection taking place, crops of furuncles may appear and the child gradually sink from inanition.

Treatment.—The bowel having been emptied thoroughly in the usual manner, the child should receive every three hours sodium sulphocarbolate, gr. 1 in solution,

and echinacea, gr. 1-6. After two days the latter is omitted for twenty-four hours and one of the sulphur laxative granules (sulphur, gr. 1-33; strychnine arsenate, gr. 1-134; podophyllin, gr. 1-67; collinsonin, gr. 1-134; hydrastin gr. 1-67) given instead. A moment's study of the formula will reveal its great value where a tonic eliminant is called for. Every other night the child receives also 10 drops of spirit of nitrous ether in water.

The mouth must be kept clean with any mild antiseptic and the affected area well washed with carbenzol (or a good sulphur) soap and then covered with resin ointment, 1 part; simple cerate, 1 part, mixed. On the face dermatol or dolomol-ichthyol may be used with satisfaction.

As soon as the condition is controlled, one granule of the "triple arsenates" should be given, after feeding, twice daily for two weeks. In some cases codliver oil or the emulsion of mixed fats (Russell) will be required to restore lost weight. I am of opinion that strong alkaline soaps are quite frequently the cause of the condition.

PEMPHIGUS NEONATORUM

Unclean mothers and nurses often convey this disease. Where sepsis follows delivery, the infant is apt to present pemphigus. Recent observers have found the streptococcus in the bladder and the blood of affected infants as well as in the milk of the mother. Exposure to cold may cause the eruption.

Anywhere from the first to the third week small blebs surrounded by a reddened base appear upon the abdomen and about the inguinal region. Sometimes other parts are involved earliest. Rarely the extremities suffer. The blebs are tense and contain a thin, serous fluid. As they burst, other spots appear, and the child suffers constantly. The itching is intense and restlessness marked.

The ruptured vesicles are followed by red, slightly moist spots which gradually dry up. I have not noted any marked constitutional disturbance, though nutrition suffers in those cases where the mouth is involved, the child then refusing to nurse.

Treatment is simple and effective. "Clean out" with calomel and iridin, gr. 1-6 each hourly for two doses, and follow with a saline purgative. Alternate every three hours the sulphur compound granule and calcium sulphide, gr. 1-6.

Boil in a quart of water a double handful of bran, strain, add to each pint 60 grains of boric acid, and apply this lotion on gauze to the affected areas. Or the skin may be sponged with the solution and after drying be dusted with this powder: Dermal antiseptic (A. A. Co.) 1 part, borated talcum 3 parts. The dolomol powders also are of exceeding value here. If any of the spots ulcerate, apply carbenzol ointment twice daily. Give an enema each night. Always give these children plenty of pure, cold water to drink.

UMBILICAL GRANULATIONS

Once in a long time we are confronted with a red, moist tumor projecting from the umbilicus which may be anywhere from pea- to marble-size. It bleeds if touched and may be covered with a thin coat of pus. The tumor may have a pedicle or present a broad base. It is absolutely necessary to remedy this condition at once and all attempts at medication will fail. If the base is broad, apply the solid stick of silver nitrate or other caustic. If a pedicle exist apply a ligature and dress antiseptically.

MASTITIS

Nurses are prone to squeeze the indurated mammæ of infants. In this way infection often occurs. A milky

fluid is obtained and the ignorant granny considers its removal essential. Occasionally the breasts are extremely red and greatly swollen; then the old ladies claim that the child bears "witches milk." If meddled with, the parts grow harder, fever sets up and suppuration follows.

Gentle massage with camphorated oil and the application of a moist compress wrung out of a solution of hamamelis or calendula will speedily cause reduction of the inflammation. In the worst cases a small amount of belladonna ointment may be spread upon a piece of linen in which a hole has been cut for the nipple. This is applied and a snug bandage thrown around the thorax. Minute doses (gr. 1-1000 three times daily) of a solution of atropine are allowable.

If suppuration has set in radial incisions must be made and the pus evacuated. Any non-irritating antiseptic dressing will suffice.

ICHTHYOSIS

When a child is born with ichthyosis in a marked form it usually succumbs. However, the attendant should wash it thoroughly with pure castile soap and cover the entire body with an ointment consisting of carbenzol one part, lanolin two parts, vaselin three parts. As soon as the cord has dropped the body must be gently washed with salicylic-acid soap, rinsed and then sponged with a solution of potassium permanganate (grs. 10 to the quart). One of the "triple-arsenates" granules may be given twice daily, and great care taken to insure assimilation of food. If the child can be brought through the teething period, treatment can usually be made effective.

These may be considered as the main disorders which distinctively affect the infant during the first month of his life. The other diseases of childhood will be considered in subsequent sections.

CHAPTER III

NOSE, THROAT, MOUTH AND EAR

RHINITIS (CORYZA)

This condition, common even from birth, is known as "the snuffles," and affecting the new-born or few-days old child, it receives all sorts of peculiar treatments, among them being injections of urine and inunctions with a tallow candle. As already pointed out, persistent rhinitis in the infant often means syphilis, but it is not safe to make such a diagnosis without further grounds.

The child constantly "blows bubbles" of mucus from the nostrils and the breathing is interfered with, sleep is disturbed and proper nursing prevented. If the coryza be of a simple variety due to catching cold the discharge is thin and not extremely copious, and there may be some signs of bronchitis. Indeed, if the condition does not receive attention bronchitis (or even pneumonia) may follow.

True Syphilitic Rhinitis is marked by a snuffling respiration early, and later by the discharge of a serous or blood-streaked discharge; the nostrils being occluded by greenish scabs. Here of course we must at once institute constitutional treatment while at the same time maintaining cleanliness of the nares.

Simple coryza will yield readily to warmth, a few doses of calomel (gr. 1-10 each) and instillations of warm salt water or a mild alkaline antiseptic (made by dissolving one "menthol compound" tablet in a pint of water) followed by an antiseptic oil. I take half an ounce

of albolene and add one dram of campho-menthol; this I apply with a feather. Euarol may be used in the same way. If the mucosa swells considerably and interferes with breathing a camelshair brush may be dipped into a 1 : 3000 solution of adrenalin and applied to the nares thoroughly after cleansing with the aqueous solution. Or one part of carbenzol ointment may be mixed with two of cold cream and carefully applied.

Pseudomembranous Rhinitis is rare and calls for prompt treatment. The few cases I have seen have occurred during the course of scarlatina. The mucosa is swollen greatly and large masses of detritus are voided from the posterior nares, together with a profuse purulent discharge. If only one nostril is involved a foreign body must be suspected; in such a case careful examination with reflected light should be made. Or the child's mouth may be covered with thin muslin, the other nostril occluded with the operator's finger and forcible expiration be made by the latter directly into the open mouth. In many cases the object will be expelled.

However, the general condition of the child will generally enable the attendant to make a clear diagnosis. If the rhinitis accompany the infectious diseases (as diphtheria or scarlatina) constitutional treatment will have been instituted and local measures alone will be required in addition. If, however, calx iodata is not already being given its use will hasten the cure; give gr. 1-3 every three hours. Thoroughly irrigate the nares and with an oil atomizer throw in a liberal amount of euarol. If the condition presents alone, and there is any fever, give a few doses of aconitine or the "coryza" granule (atropine sulphate, gr. 1-1000; aconitine, gr. 1-500; codeine sulphate, gr. 1-67; quinine arsenate, gr. 1-33) dose according to age. For a child under one year add one granule to twelve teaspoonfuls of water and give thirty to sixty drops

every two hours; if over a year old give double the dose. In stubborn cases it may be necessary to paint the mucosa with a 1 : 100 silver nitrate solution. In cases of syphilitic rhinitis calx iodata and stillingin, together with eliminants, should be exhibited for some months. In scorbutic patients improve the nutrition by proper food and hygiene, and push nuclein and the iodide of iron. An ointment of nosophen gives excellent results in these cases.

ADENOIDS

Though these troublesome hypertrophies of the lymphoid tissues are not usually noted till after the fourth or fifth year they may be present in infancy. The child breathes through its mouth, snoring in its sleep. The expression of the face is dull and fixed and the voice flat and without timbre. Quite frequently there is an eczematous eruption at the orifice of the nares. The submaxillary glands are hypertrophied more or less and the sense of smell, and sometimes hearing also, are impaired. These children are stupid, "backward," and likely to stammer. In marked cases the diagnosis is made from the facies alone; but sometimes the growths are small and upon examination the operator fails to discover the condition. Later, rhinitis, inflammations of the ear, attacks of pharyngitis and varied constitutional disturbances may lead to more careful exploration, when the growths will be found.

Suitable medication will do much for these patients, if commenced early, but later on operation alone will suffice to effect a cure. Iron iodide or the arsenates of iron, quinine and strychnine, alternated with calx iodata, will cause the growths to shrink and sometimes to disappear. Lugol's solution may be used locally, or a strong solution of calendula and pinus canadensis. I cured one case with thuja applied three times a day with a swab.

However, it is better to remove the adenoids thoroughly under ethyl-bromide or ethyl-chloride anesthesia. The operation is over in thirty seconds and if well done is free from danger, though it is well to have the patient under observation for some hours, so as to be prepared in case secondary hemorrhage should develop. Gottstein's curet is the best instrument to use. Have the child held firmly in the arms of an assistant (*not* the mother) and insert a mouth-gag. Pour one ounce of the ethyl bromide into the cone and apply it closely over the face. Instruct the child to "breathe deeply" (though fright will cause him to do this anyhow) and as soon as the head relaxes withdraw the cone and with the curet sweep thoroughly the pharyngeal vault; the peculiar feeling of yielding tissue will be distinctly noted. Do not use too much force but be sure that you *do* remove the growths. Now with the hooked finger sweep the debris from the pharynx, removing at the same time any adherent fragments of adenoid tissue. Depress the head, allowing the blood to find its exit from the open mouth. If bleeding is too profuse inject peroxide of hydrogen through the nares, or a dram of a 1 : 2000 solution of adrenalin chloride. Adenoids may be easily removed if one tablet of hyoscine, morphine and cactin is given and an hour later a few drops of ether. No after-effects are experienced.

EPISTAXIS

"Nosebleed" frequently occurs in children and sometimes assumes a dangerous aspect. Many a doctor has met his Waterloo here, only to find the patient cured with puff-ball powder, cobweb or a piece of fat bacon pushed well up into the bleeding nostril.

The most stubborn hemorrhages from the nose occur in the young infant and a hidden epistaxis may lead to a supposed melena. In every case, therefore, ascertain

the origin of the bleeding and then treat it as the conditions present make necessary. Nosebleed from trauma usually ceases spontaneously, but if it is prolonged the possibility of fracture should be considered. Foreign bodies may set up obstinate bleeding, or a nasal ulcer may erode into a vessel. In the latter case hemorrhage is likely to be profuse and stubborn. Epistaxis often ushers in the exanthemata and here really may be beneficial.

Various constitutional disturbances may cause "nosebleed;" strumous conditions, plethora (in these cases do not stop it too early), cardiac disease, hemophilia and leukemia are all possible causes. Study any nontraumatic case carefully and after stopping the hemorrhage *treat the patient.* Girls approaching puberty, and even boys, may have frequent attacks of epistaxis. Ordinarily little attention is necessary. Hard study at the period of adolescence in crowded school-rooms may set up epistaxis.

Treatment.—The patient should have the clothes loosened and sit with the arms elevated. Apply ice or cold compresses to the back of the neck and over the affected nostril. A pad of cotton placed under the upper lip and pressure made over it will often suffice. Insufflations of alum or tannin are useful but stypticin is better still. Antipyrin (in powder or in 20-percent solution) is also sometimes effective. Better than all, however, is a thorough cleansing of the nares and the passage of strips of gauze saturated with adrenalin solution. With a catheter threaded with a stout string a yard long traverse the nasal passage and with a pair of forceps catch the string as it appears in the fauces; draw it out through the mouth, leaving the other end pendant from the nostril, and fasten to the oral end a piece of gauze two inches wide and three and a half to four long; tie it *in the center*, saturate the gauze with either glycerite of tannin or adrenalin solution and pull it well up into the posterior nares.

Plug the anterior nostril with small pieces of gauze fastened to a thread. This will put an end to the worst hemorrhage, for the time at least. In ordinary cases full-strength hydrogen peroxide will give prompt results. If nothing else serves to check the hemorrhage wash out the nostril with *hot* water and with reflected light find the bleeding area and touch it with silver nitrate or a crystal of chromic acid. A silver probe may be heated to a dull red and applied. A few doses of atropine will usually help wonderfully and I have instantly stopped a profuse epistaxis by giving gr. 1-500 and spraying the nostril with a one-to-four solution of acetic acid. Polypi, spurs or other abnormalities must receive proper attention. Hemophiliacs require calcium chloride, the arsenates and hydrastin. Calcium lactophosphate, one granule three times a day, will often prove the best remedy.

NASAL POLYPI

Soft mucous growths sometimes obstruct the nares and in rare instances we encounter fibrosarcomata, usually pedunculated and of tense structure. Constant discharge, hemorrhage, mouth-breathing, snoring and deoxygenation of the blood may result. Operate early under local anesthesia (cocaine, 2 percent; alypin, 4 percent; or stovaine, 4 percent; adding half the quantity of a 1 : 1000 adrenalin solution). Then pack the nostril with a strip of gauze well smeared with vaseline and lightly dusted with equal parts of boric acid and acetanilid. I have had the best results from bismuth-formic-iodide gauze. The cold wire snare is the best instrument to use in early childhood; the galvanocautery, if general anesthesia is induced, or in older children who will keep still.

ACUTE TONSILLITIS (ANGINA)

There are many varieties of angina, socalled, some trivial, some serious, but the least inflammation of the

tonsils opens the way to extensive infection. Never take half measures and do not attempt to treat this affection locally alone.

Simple *catarrhal tonsillitis* will not always be easily recognized in the infant, though rise of temperature, crossness and evidences of pain show the existence of disease.

The throat should always be carefully examined, even where other and sufficient causes for fever are discovered. The tonsils are engorged and the pillars reddened; the infant drools and cries when nursing, while an older child constantly fingers the throat. Early in the disease there is physical depression and perhaps vomiting, while convulsions are not uncommon. The temperature may reach 103°–104° F., and the pulse rate is 120–140. In a day or so the constitutional disturbances become less evident, but the local condition grows worse. Children of five years or older present all the symptoms so familiar in adults.

Treatment.—Four hourly doses of blue mass and soda, gr. 1-2, and iridin, gr. 1-6, may be exhibited to a child of five or more, and half that quantity to a younger patient. Two hours after the last dose one-half to one full teaspoonful of effervescent magnesium sulphate should be given in sweetened water (use saccharin, not sugar), and in twelve hours this may be repeated. For the younger child make a solution of aconitine and bryonin, two granules of each to twelve teaspoonfuls of water, and give thirty drops of this every hour till the temperature reaches 100° F. or less. A few minims of nuclein may be dropped on the tongue every four hours, and every two hours exhibit with a dropper ten drops of a solution of potassium bichromate, gr. 1-32 to the dram of water. As the conditions subside substitute a solution of calx iodata, gr. 1-3 to the dram.

To the older child give the calx iodata (calcidin) in powder form and order the tablet of potassium permanganate to be dissolved slowly on the tongue. To the throat apply a compress wrung out of a carbolized solution of epsom salt, i. e., magnesium sulphate, oz. 1; water, pint 1; carbolic acid, gtt. 10. (This formula is intended whenever epsom-salt solution is mentioned.) Keep the child warm and on half-diet for two days. This does not apply to the infant at the breast. One "menthol-compound" tablet should be dissolved in twelve ounces of hot water, half an ounce of glycerin added and the throat (of older children) sprayed with it three times daily. In infancy half-strength solution (or plain decinormal salt solution) may be applied with a spoon through the nares.

I am in the habit of keeping the child in one room and having the air kept moist and medicated. Sanitas oil, ten drops, in a tin half full of boiling water, answers admirably; a paper funnel may be made, and the large end being held over the top of the tin the small end is placed so that the child inhales the steam. In all infections of the throat, etc., this method applies. Eucalyptol, oil of turpentine and other volatile antiseptics may be substituted for the sanitas. The cresoline vaporizer is of real benefit.

If the urine is concentrated or lithemic conditions are present give barley water, *ad lib.*, gr. 1-3 lithium benzoate, and a few granules of salicin, t. i. d. Salithia should be used in such cases in place of the plain saline.

In Follicular Tonsillitis the crypts are filled with yellow plugs and the whole tonsil may be covered with a viscid secretion. After a preliminary "clean up" push calcium sulphide and calx iodata (gr. 1-6 and gr. 1-3 respectively), giving them alternately every two hours. Nuclein, six drops, three times a day. For hyperpyrexia (104°–105° F.) gelseminine or veratrine, "dose according

to age." If the pain is severe, gr. 1-1000 of hyoscyamine may be given and repeated every four hours. Hydrogen peroxide removes promptly the gross secretion, and if we are then able to reach the tonsils we can, with a pledget of cotton twisted upon a stout broom-straw, cleanse each follicle. Dry and touch with the straw dipped in 95-percent carbolic acid, then neutralize with alcohol. Any good alkaline antiseptic mouth wash may be used freely. Cinnamon water is as useful as any. This will also stop the vomiting which often exists.

Do not be careless and mistake diphtheria for follicular tonsillitis. In any case where fibrous exudate is present and the pillars or pharynx are at all involved treat the case as one of diphtheria until a bacterial culture has been made and proven negative. After the acute symptoms have yielded, the child will require the triple arsenates, phytolaccin and xanthoxylin for some time: gr. 1-6 each of the latter between meals and one granule of the arsenates after food.

Croupous Tonsillitis.—It is not always easy to distinguish this from diphtheria. The fever and systemic disturbances generally are less marked and the tonsils are covered with a thin grayish or yellowish film which is easily removed with a swab. If adherent at all and bleeding follows its removal, antitoxin is demanded. Otherwise treat as you would the follicular variety.

PHLEGMONOUS TONSILLITIS (QUINSY)

This condition is rare in younger children. There is marked swelling of and about one tonsil; the temperature rises and the tongue is foul. The patient can hardly open the mouth and winces when swallowing. Examination reveals the inflamed area (the uvula may be pushed to one side) and after the third day fluctuation can be detected.

Treatment.—In quinsy, early treatment means everything. At the first sign of pain and swelling the patient should receive calomel, gr. 1-6, podophyllin, gr. 1-6, half-hourly for three hours and two hours later a saline draught. If the mercurial is objected to, iridin, gr. 1-6, may replace it. Calcium sulphide, gr. 1-6 to gr. 1, should be given hourly from the first, and one of the defervescent compound granules, No. 2, should be given every two hours till the fever falls. Nuclein should be given early: with the calcium sulphide, gr. 1-6 each of baptisin and phytolaccin may be given four times daily. Cold epsom-salt compresses may be applied if the patient is seen early; if pus has formed, apply carbenzol liberally and over that a thick layer of one of the glycerinized pastes, antiphlogistine for instance. In the first stage the patient may suck ice; later it helps to fill the mouth with hot water. Small doses of codeine will relieve the pain, but hyoscyamine, gr. 1-500, is more desirable.

As soon as pointing occurs, incise; relief is instant. It is well to wash out the cavity with hydrogen peroxide. For some days have the throat gargled with cinnamon water and keep the bowels open.

CHRONIC TONSILLITIS

This is an extremely common, often hereditary complaint. It is often found with adenoids or elongated uvula and is an evidence of "lymphatism." The tonsils sometimes almost meet and render both breathing and speaking difficult. At fourteen or fifteen it is usual for atrophy to occur. However, the tonsillotome should be used in nearly every case, though constitutional treatment often avails.

Iron iodide, nuclein and phytolaccin are the remedies of choice, and small doses of calx iodata (calcidin) may be given three times daily for a week out of each month.

Hydrastin has also given good results; gr. 1-6 may be given, with brucine, gr. 1-67 t. i. d. before food. An aqueous preparation of thuja, one part, calendula, one part, may be applied direct to the tonsils with prompt effect. Eupurpurin and collinsonin may also be utilized for their alterative effect.

ACUTE PHARYNGITIS

In the initial stage of the exanthemata pharyngitis is common. It may, however, occur primarily. The pharynx has a burning sensation and feels dry; on inspection it is seen to be red and glazed or edematous; there is increased secretion. The cervical glands are swollen, and pain at the angle of the jaw is complained of, together with headache and malaise. The temperature may be 100° or 103° F.

Treatment.—In simple cases a brisk cathartic (calomel gr. 1-6, podophyllin, gr. 1-12, hourly for four doses, followed by a saline) together with a few doses of pilocarpine (gr. 1-67) will clear up the trouble. The mouth and throat may be well sprayed or gargled with a mentholated solution, ice may be sucked and a few minute doses of phenacetin given to relieve the pain. Collinsonin seems to exert an almost specific action in these cases, gr. 1-6 every two hours giving prompt relief.

For young children the sulphur laxative formula will prove ideal, giving one granule hourly for four doses. It contains: sulphur, gr. 1-33; strychnine arsenate, gr. 1-134; podophyllin, gr. 1-67; collinsonin, gr. 1-134; hydrastin, gr. 1-67. It also often is desirable to give to older patients one such granule, together with collinsonin, gr. 1-6, every two hours. Another extremely useful formula is the "tonsillitis" triturate, which contains aconitine amorphous, gr. 1-500; bryonin, gr. 1-500; atropine, gr. 1-1500; mercury biniodide, gr. 1-100. These

two combinations may be given alternately with excellent results, and the child does not have any trouble to "take the medicine," either. They are of value in almost any inflammatory condition of the throat.

RELAXED UVULA

This frequently is met with in anemic, debilitated children. Others, apparently healthy, have a tendency to periodic relaxations. Glycerite of tannin or mild solutions of alum are useful locally, while a course of bitter tonics (quassin, hydrastin, and the arsenates of iron, quinine and strychnine) will improve systemic tone. Eupurpurin, gr. 1-6, and berberine, gr. 1-67, every four hours, have given me good results. In stubborn cases or where the elongation is great, amputate part of the uvula with a pair of curved scissors after seizing it with a tenaculum forceps. In uvulitis with edema puncture and apply astringents.

A very useful, mildly astringent antiseptic for use in tonsillar and other throat affections is prepared by dissolving one dram of the following powder in 4 to 6 ounces of *hot* water, in *septic* conditions using three ounces and one of cinnamon water: sodium bicarbonate, sodium borate, and sodium salicylate, one ounce of each.

Relaxed uvula may cause vomiting, and in obscure cases it is well to think of this fact.

STOMATITIS

There are four varieties, namely, catarrhal, ulcerative, herpetic, and gangrenous, the last-named (cancrum oris, noma) being as rare as the first is common. Catarrhal stomatitis complicates various diseases and accompanies dentition; the use of "babies' comforters," teething rings and dirty nipples may be looked upon as the most frequent cause. The mouth is sore and hot and the mucosa

swollen; sometimes the lips are involved; the tongue occasionally becomes "too large for the mouth." More or less salivation exists.

Treatment.—This is simple and effective. Blue mass and soda, gr. 1-2, repeated in two hours, with iridin, gr. 1-6, on alternate hours, and a few teaspoonfuls of saline laxative every three hours, for a day or two. After each nursing wash the buccal cavity with a swab (or spray it) using the formula just given (the bicarbonate, borate and salicylate of sodium) or a mentholated solution of the sulphocarbolates. One menthol compound tablet (boric acid, gr. 1-4; benzoic acid, gr. 1-4; sodium silicofluoride, gr. 1-2; sodium sulphocarbolate, gr. 1-2; sodium bisulphite, gr. 1-2; thymol, gr. 1-2; menthol, gr. 1-2; eucalyptol, gr. 1-2; camphor, gr. 1-16; hydrastine, gr. 1-16) added to sixteen ounces of water will make a perfect mouth-wash. Ulcerated spots may be touched with a 4-percent solution of silver nitrate. I give children prone to stomatitis menispermin, gr. 1-6, morning and night for a month. Investigate the bottle and habits of the nurse.

HERPETIC STOMATITIS (APHTHOUS STOMATITIS)

This may follow the former variety. Small red spots or vesicles form on the edge of the tongue and buccal mucosa; the vesicles rupture and minute ulcers form. The edges are abrupt, having a "punched-out" appearance. Untreated they may run together and a fearful condition follow. The internal medication is the same as given above. Locally, wash the mouth thoroughly every two hours and apply silver nitrate to the ulcers after touching with pure hydrogen peroxide and drying. Burnt alum also is effective. Children over a year old

may take, with great benefit, one sulphur compound granule and one of menispermin (gr. 1-6) t. i. d. Thuja is useful. It is well, in all these cases, to order a full enema of decinormal salt solution every third day. See that the attendant knows how to give it.

ULCERATIVE STOMATITIS

After the teeth are all cut this disorder may prove troublesome. I have never seen it in well-fed, clean, healthy children. Lead, phosphorus or mercury poisoning may cause it. Ulcers appear at the union of the teeth and gums and rapidly spread to other parts of the mouth. Intense congestion exists; the gums are covered with a foul exudate and bleed readily. The teeth loosen and may fall out. The general health suffers, of course, but the fact that the system itself is affected primarily is shown by the malaise, fever and glandular swelling. I have seen the cervical glands as large as walnuts, a fever of 103° F., foul breath and absolute anorexia in a case where the only ulcer to be found was barely one-eighth of an inch long and affected only the very margin of the second molar.

Treatment.—Eliminate thoroughly. Give iridin and calomel, aa. gr. 1-6, every hour for three hours, every other night for a week, and a full saline laxative draught on rising the next morning and at noon. Wash out the bowel every night, and have the entire body sponged with epsom-salt solution in the morning. Give a light, nutritious diet—fruit, red meat, eggs, milk, cereals. Attend to the toilet of the mouth yourself once daily: wash it well with hydrogen peroxide 2 parts, water 2 parts, and glycerin 1 part; then rinse with pure water and with a camelshair brush touch the ulcers with a 5-per-cent silver nitrate solution, or use a strong ichthargan solution. Oxychlorine—the pure powder or a 10-grain-

to-the-ounce solution—may be used every hour or two by the parent. Potassium chlorate, 2 grains in solution, should be given three times a day—nothing proves more serviceable. Also nuclein, 6 drops under the tongue morning, noon and night, and hydrastin gr. 1-6, juglandin gr. 1-6, half an hour before meals. After food give sodium sulphocarbolate, gr. 1, with water. As a tonic, later, the triple arsenates, one or two granules after each meal, are advisable. It is well to examine the urine every few days. If pain is severe enough to disturb sleep, give one "calmative" (Candler) tablet in a little sweetened water half an hour before bedtime. The "anodyne for infants" is another reliable combination. The "calmative" contains hyoscyamine, gr. 1-500; oil of cajeput, m. 1-67; oil of anise, m. 1-67; menthol, gr. 1-67; monobromated camphor, gr. 1-67; scutellarin, gr. 1-32. The "anodyne" formula is: Nickel bromide, gr. 1-134; codeine sulphate, gr. 1-67; ipecac, gr. 1-134; lithium carbonate, gr. 1-24; oil of anise, m. 1-134; saccharin, q. s. It would be difficult to find a condition calling for an anodyne which cannot be perfectly met with one or the other of these preparations.

GANGRENOUS STOMATITIS (NOMA)

Hitherto a fearfully fatal malady. Positive therapeutic measures instituted early will, however, save fully two-thirds of the cases. Fortunately the disease is rarely met with save among slum children or those reared in squalid surroundings. As a rule it follows measles or scarlatina, but occasionally seems to appear primarily. It is infectious.

The child, who appears listless and cross, complains of an itching, burning pain in the cheek. The first definite symptom is a small red spot (with discolored margin) located on the cheek or lip. This spreads and the tissues

become indurated and rapidly break down, usually from the center. Only rarely, after a child has been fretful and has refused to eat for a few days, the extremely offensive breath will lead someone to examine the inside of the mouth, when a large necrotic area will be discovered. The external edema which has existed will have been considered as due to toothache or ivy-poisoning. Such patients almost invariably die; still, even so, every possible effort should be made to save. The profuse diarrhea and vomiting, which often exist, evidence the profound systemic derangement.

Treatment.—In all stages *clean out* and *keep clean* the primæ viæ. One full grain of blue mass and soda and iridin gr. 1-3 should be given hourly for three hours every second night; saline laxative draught morning and noon; echinacea, gr. 1-3, and calcium sulphide, gr. 1-6, every two hours, and cactin, gr. 1-134, brucine, gr. 1-134, every four hours, with nuclein, 10 drops hypodermically twice daily. Antistreptococcus serum *may* be used, but nuclein and colloidal silver (Credé) will prove as efficient.

If seen early, inject 4 to 8 drops of carbolic acid into the induration—one drop, at intervals, around the margin. Paint the outer skin with the carbolic acid and in two minutes wash with alcohol. Now apply compresses wrung out of equal parts of thuja (alcoholic extract) and echinacea. Rub in thoroughly under the arm or over abdomen a dram of Credé's ointment every twelve hours.

Have the mouth cleansed with any non-toxic positive germicidal solution. Cinnamon water has proven as useful as anything. If necrosed tissue exist, thoroughly remove it with scissors and inject the carbolic acid into and all around the margin and swab with pure oil of turpentine (Merck). Cover with gauze moistened in the thuja-echinacea solution. If it is necessary to pack gauze *in* the buccal cavity, change hourly at least

Nourish per rectum to a great extent; the less the child swallows for forty-eight hours the better. The efficacy of this treatment is almost startling and proves the ability of the therapeutist using the *right remedy* to control disease-processes.

APHTHÆ (BEDNAR'S), ULCER OF FRENUM, ETC.

Small ulcers over the palatal bone. Often intractable. The mouth must be kept clean with the antiseptics already recommended and the ulcers touched twice daily with a 10- to 20-percent solution of protargol. Internally calx iodata, gr. 1-12 (in powder with milk-sugar) every three hours, and a sulphur laxative granule twice daily. Thuja and calendula (locally) also are recommended. Do not forget that a stubborn ulcer of the frenum which bears a tough, false membrane (known as Riga's disease) requires extirpation with the knife.

THRUSH (SPRUE)

Really a stomatitis, due to the presence in the mouth of saccharomyces albicans. It will never affect children whose mouths are kept clean. It is practically impossible to make an erroneous diagnosis, and every "granny" can tell the doctor what to do to "cure (?) the sprue." The wise man will do this:

Give the baby calomel, gr. 1-10, with aromatics, on the tongue, every hour for three hours, and hourly thereafter for three hours two teaspoonfuls of a solution of effervescent magnesium sulphate (saline laxative) sweetened (one dram of the saline, 8 ounces of water, and half a granule of saccharin). Make a solution of boric acid, 10 grains, zinc sulphocarbolate, 5 grains, water, 2 ounces, and order the child's mouth washed gently but well with

this, using a swab of cotton on a stick. The addition of a little extract of calendula will hasten the cure. A resorcinated preparation of calendula with a soluble bismuth salt added (known as calenduline) has, for many years, in my hands, proven almost a specific in most diseases of the mucosa and in stomatitis, while in simple conjunctivitis it is very valuable. It may be given internally with advantage. Reduce the amount of sugar in the child's food, and if at all feasible, substitute barley water for milk for a day or two; if milk is used, add two drams of lime water to each feeding.

GLOSSITIS

Look for the cause—decayed teeth, marginal ulcer, etc. Empty the bowel and keep the buccal cavity thoroughly clean with cold antiseptic solutions. Let the child suck ice. Minute doses of atropine and the sulphur compound granule, one every three hours, will usually suffice. Saline-laxative draught three times daily. In urticarial cases a few doses of blue mass and soda, followed by saline laxative and an epsom salt sponge-bath, will stop the trouble. The bowel should be flushed, and light diet ordered. "Calmative" granule to secure sleep.

DIFFICULT DENTITION

Frequently due to improper food. Calcium lactophosphate, gr. 1-6, three times daily will in many cases prove desirable, the lime salts being insufficient. Rickety children are especially prone to trouble during dentition. It is always well to make a very thorough examination of the child before attributing restlessness, evidences of pain, etc., to "teething," for many other disorders may cause such symptoms. As a matter of fact, many children cut their teeth without trouble, barring some tenderness of the gums and increased secretion of saliva. Gastro-

intestinal troubles are apt to accompany dentition (rarely are caused by it) and proper treatment will alleviate the symptoms promptly. Some fever and enlargement of the cervical glands may be noted, but investigation usually will reveal some area of infection.

Convulsions may accompany the cutting of one tooth or most of them, but digestive disturbances will usually be found to be the real cause. If the mouth is hot and dry and the gum swollen, make a free incision to the tooth—don't haggle or scratch but incise deeply and sever resistant tissue. A weak solution of adrenalin and cocaine may first be rubbed over the gum with the little finger wrapped in gauze. A few doses of hyoscyamine (gr. 1-1500) will relieve congestion and give the child sleep. The calmative formula is even better (one tablet dissolved in a teaspoonful of water: 10 drops every hour or two). The "anodyne for infants" (Waugh) will be useful if there is diarrhea. Govern the dose by the codeine-content.

Always wash out the mouth and bowel with a mild saline or slightly astringent solution, and if there is hyperacidity, give the neutral cordial tablet (sodium carbonate, gr. 1; sodium sulphocarbolate, gr. 1; hydrastin, gr. 1-6; emetine, gr. 1-134; rhein, gr. 1-6; aromatics), one tablet dissolved in two drams of hot sweetened water, ten to fifteen drops before and after food. If indigestion is marked, add papayotin, gr. 1-6, and reduce the strength of the food.

Extremely loose or fetid stools will call for the treatment outlined under "gastroenteritis." Do *not* use bromides or opiates. It is permissible to rub the gum with a drop of paregoric. Absolutely forbid teething rings, "suckers," etc., unless of ivory or smooth bone and the mother undertakes to see it properly cleaned and disinfected after use.

EARACHE

Aural Inflammations and Discharges.—The child may suffer from any one of many diseases of the ear, and it would therefore be impossible in a book of this limited character to enter into details. However, the most common disorders of the ear will be considered and effective treatment suggested. It need hardly be pointed out that diseases of the middle ear, mastoiditis, etc., will call for special measures which as a rule can only be carried out by an aurist or surgeon. Eczema of the external ear will be considered under "Eczema."

Nine "earaches" out of ten are due to cold and may accompany or follow a coryza. The pain may come on suddenly (in the night, perhaps) and no distinctive symptom present. A child of a year or over will put its hand to the affected part, but small infants merely cry loudly and almost continuously. The pain may continue for a few hours or days.

A *discharge* from the ear calls for prompt and intelligent treatment, always. If the young infant has a coryza, or we have reason to believe the ear is inflamed, we will give relief by gently syringing the canal with warm salt water; the head being held so that the affected side is downward over the basin. The canal should be dried with cotton, extreme care being necessary to avoid injury to the tympanum, and a drop or two of camphomenthol or plantain oil (warmed to 99° F.) dropped in. Close the canal with a pledget of cotton. If this does not relieve, insert a drop of 5-percent cocaine solution to which add a drop of adrenalin chloride, 1 : 1000. If inflammation is evident, apply cold compresses, give saline purgatives, and gelsemine, gr. 1-1000 (in solution), every two hours.

If pus forms behind the drum, perforation will follow, with relief. Rarely indeed can the physician detect the

trouble and incise in time. If pus issues from the ear, assure yourself of the source. Cleanse with hydrogen peroxide and water, equal parts, using the hard-rubber aural tip on the syringe and avoid force. Carbolized oil, camphorated oil, plantain oil, or better still, euarol, should then be applied and the outer ear alone lightly packed with cotton. Do *not* use powders. Carbenzol ointment proves effective in all inflammations of the external auditory canal.

In older children complaining of pain (or discharge) from the ear, an examination should be made for foreign bodies. Adenoids should be looked for, and also decayed teeth—pain is often reflex. Impacted wax is softened in a few moments by hydrogen peroxide and may be removed easily with a stream of warm water directed against the *side* of the canal.

Insects can be floated out on oil. Never use water unless sure that the occluding substance cannot swell.

Anemonin and macrotin (gr. 1-6) may be alternated in obscure earaches, and a few doses of rhus toxicodendron (gtt. 1-10) exhibited, together with half a teaspoonful of salithia in plenty of water morning and night, where lithemic conditions are suspected. If pus is present, push calcium sulphide to full saturation of the system and add the indicated alterative. A solution of atropine —grs. 3 to oz. 1—is particularly useful in beginning congestions and rheumatic otitis; drop two minims into the canal and repeat in four hours.

A solution of aconitine in glycerin and hot water is of great value in beginning congestions with temperature. For use 1-67 grain is dissolved in one dram of boiling water and 10 drops of glycerin added. Use two drops. If pus begins to form, *hot* glycerinized pastes or hop fomentations will be the best applications. A drop of laudanum may be placed in the ear before heat is applied.

In *acute otitis media* prompt cupping or application of the artificial leech may prove curative if at the same time the child is purged, and aconitine alone, or better, aconitine, digitalin and strychnine, is exhibited in fairly full doses. Apply a leech in front of and just beneath the tragus. To the vault of the pharynx apply potassium iodide, grs. 10, iodine, grs. 5, glycerin, oz. 1. This is during the hyperemic stage. After paracentesis, or rupture of drum, nothing will equal instillations of formalin, gtt. 3, hydrogen peroxide and boric-acid solution (saturated), each half an ounce. Use after irrigation with boric-acid solution or a 2-percent ichthyol solution.

Chronic otitis media calls for the attention of an aurist. However, either euarol or camphomenthol solution may be applied on cotton after mopping out the ear, or aristol, dermatol or boric acid (calendulated) may be applied with a powder-blower.

Remember that only in chronic cases is the use of powder permissible.

TOOTHACHE

Give a few small doses of calomel and podophyllotoxin; flush the alimentary tract with a saline draught and apply heat to the face. If a cavity is found, put in a crystal of carbolic acid and seal with a little cotton dipped in collodion. Oil of cloves may be used also. The tooth should be extracted promptly if troublesome.

ABSCESS: IDIOPATHIC, RETROPHARYNGEAL, OR RETROESOPHAGEAL

The first form usually affects infants under a year old. Rhinitis, pharyngitis, etc., exist primarily. Diagnosis is extremely difficult till late and the child is treated often for everything else. The symptoms are fever and consti-

tutional disturbance early and later dyspnea, refusal to nurse, with evident pain on deglutition, cough and regurgitation of fluids through the nose. In many cases the head is twisted (torticollis) or thrown far back. On opening the mouth a swelling is discovered in the extreme back of the pharynx; sometimes it is also apparent at the angle of the jaw. Sudden death may follow rupture of the abscess during sleep, or the infant may succumb to sepsis.

Treatment.—If noted early, echinacea and calcium sulphide with nuclein should be administered. Heat should be applied to the throat till fluctuation is noted, then the abscess opened by free incision. The child will require careful feeding, and sanguiferrin, bovinine or similar prepared blood-food should be given to improve the nutrition.

In *Pott's disease* a similar abscess may form or the retroesophageal lymph nodes may be affected. Most patients die in the latter case. In the former the abscess forms slowly and if it ruptures leaves a suppurating sinus. As soon as discovered the cavity should be opened and drained externally. Incision should be made in front of the sternomastoid muscle, just beneath the jaw; incise the skin and use a grooved director and scissors to explore. Wash out with hydrogen peroxide and warm boric-acid solutions. Calx iodata or iodoform may be exhibited (with nuclein) three times a day.

CHAPTER IV

DISEASES OF NUTRITION

MARASMUS (WASTING DISEASE)

This is perhaps the most troublesome disorder the doctor has to contend with among children. Inanition, a more serious starvation, usually ends within a week or two one way or the other, the patient dying from sheer inability to live, or suddenly beginning to thrive under proper individualized feeding. But the marasmic infant eats, sleeps and "goes through the motions" of living, so to speak, and yet each day looks a little more ghastly and cadaverous than it did yesterday. Here, indeed, surprises are in store for the scientific doctor. His carefully balanced mixtures may be given in the most perfect manner, yet the infant loses weight. Consultations are held and the rarest milk and most delicate combinations of cereal gruels therewith may be ordered. The child absorbs them and grows shadowy, whining meanwhile his marasmic whine till the parents grow morbid. And then comes along an old, every-day doctor, or a nurse who has raised hundreds of youngsters and gives the child stale crusts soaked in mutton or chicken broth—and immediately it waxes fat! Or he feeds it cream and hot water, adding half a teaspoonful of beef juice, and in a day or two the wail stops and the infant smiles for the first time in its life! We must not be too scientific in marasmus but feel our way and do "the right thing for the conditions present" soon enough to save life.

In nine cases out of ten it is best to stop all milk for a few days, feeding the child chicken or mutton broth

(clear) in small quantities, or barley water with bovinine or fresh beef juice from steak. Into the bowel—after an enema of salt water—throw, morning and night, an ounce or two of the same material and have someone make pressure on the anus for ten minutes after. Rub the one side of the body with codliver oil or fresh butter one night and the other side the next night, taking up fifteen minutes in the operation.

In the daytime have the little one live in the open air and have it moved from one position to another every hour or two. Don't pile clothes on it—let the sun get at its skin. Shade the eyes and head, however.

If a good wet-nurse can be had, try her as a source of nourishment, but be ready to go back to your "unnatural" foods already described. Usually after a week or two normal assimilative conditions are established and it is safe to alternate modified milk with the broth or what not. In desperate conditions it may be necessary to feed ten to twenty drops of prepared bovine blood (sanguiferrin, bovinine, etc.) every hour, giving nothing else except thin barley water. This we shall do when food is vomited soon after taking. To these children I give brucine, gr. 1-134 t. i. d., and 10 drops of the colorless solution of bismuth and hydrastis (Merrill) in a dram of water, before feeding.

Very small doses of papayotin and strychnine will also help out in cases of marked gastric atony. Take one of the papayotin compound tablets (papayotin, gr. 1-6; strychnine arsenate, gr. 1-134; emetine, gr. 1-134; capsicin, gr. 1-67) and crush it well with 5 grains of milk-sugar. Make five powders and give one just after food, following with a dropperful or two of plain boiled (cool) water to insure its arrival in the stomach. This same combination will be of marked service in any case of indigestion or malassimilation during infancy.

In every case feel your way, giving the plainest and most nutritious food possible in very small quantities. Improve the surroundings and gradually add to the dietary until you have a fairly normal-looking child. Do not expect, however, that the "hue of health" will always appear. Be satisfied to save the child's life even where it continues to appear very much like the lineal descendant of the "living skeleton." In all such cases tuberculosis or other constitutional taint must be suspected, and a positive diagnosis should never be made until you have carefully studied every feature of the case. Despite every effort some children will die.

MALNUTRITION

A less severe and infinitely more amenable disorder. The child does not gain weight (see "normal gain by months") and appears anemic and puny. There is not, however, the distinctive facies of marasmus, neither does the infant utter the pitiful cry often noted in the latter disease. It chills easily, is apt to regurgitate its food, and sleeps poorly, frequently starting or twitching during slumber. Immature parents, tubercular, luetic or other constitutional taint may be the cause; improper food and dark rooms with lack of sunshine and fresh air more often are responsible. Any serious disease may be followed by malnutrition.

The treatment (excluding tuberculosis, syphilis, etc.) is similar to that outlined under "Marasmus." Quassin, hydrastin, and the arsenates of iron, quinine and strychnine often are of benefit, but nuclein is without question the most efficient remedial agent. Four to six drops may be given t. i. d., but always on an empty stomach. Sanguiferrin and emulsion of codliver oil often are of service; the papayotin powder named under "Marasmus" will insure digestion of food.

RACHITIS

Rickety children are not infrequently met with, especially in the cities or mining and mill communities. The diagnosis is easily made but treatment requires careful adaptation to the individual. Unfortunately the little patients often are found among people who refuse to believe in the value of hygiene and it is not easy to secure for them proper food or care. On the other hand, we may have a distinct case of rachitis in a bottle-fed child in a well-to-do family, and here we are able to demonstrate the power of positive therapeutic methods.

Food lacking in fats and proteids causes rickets; deficient calcium and bone-forming material, notably the phosphates, together with lack of oxygen, also will produce the condition.

The bones are especially affected; the epiphyseal cartilages grow rapidly while ossification of the shafts of the long bones is retarded. It is found that instead of the bone containing two-thirds of mineral matter and one-third animal matter, the reverse condition obtains. The result is deformity of some kind—bow-legs, large joints, and large, square heads being peculiarly noticeable. Nodules form at the junction of the ribs with the sternum, forming the "rachitic rosary." The belly is too large (pot-belly) and the funnel-breast frequent. More or less kyphosis or lordosis may be present. The skull is thickened and the fontanelles close late.

Such children are apt to be anemic and undersized. Constipation is troublesome, owing to lack of intestinal tone. The spleen may be greatly enlarged. As a rule the condition becomes evident at the sixth month, although it may not develop until the child is eighteen months old. It walks late and the teeth are cut irregularly or appear months after the usual time. All sorts of gastrointestinal

or nervous disorders are to be expected. Convulsions are frequent. The glands often are enlarged.

Treatment.—Must be persistent and varied to suit conditions. If early in life of the child we note signs of rachitis, proper feeding and the exhibition of meat juice and albumen water together with small doses of calcium lactophosphate and nuclein will do much. The child's skin must be kept active and the kidneys and intestine should be made to act freely. Saline laxatives will suffice. Cream and predigested cereal gruels are excellent; oatmeal water should be preferred as a diluent for the milk. The child should spend most of the time in the open air. The limbs should be massaged with olive oil daily. After eight months we may give a little yolk of egg beaten up with milk, meat broths, fruit juice and olive oil. The latter is more efficacious if half an hour prior to exhibition 1-3 grain of papayotin is added for each dram and the mixture placed in a vial which stands in warm water. Shredded wheat, well-cooked oatmeal, zwieback and scraped meat will give good results after a year and at this time we may give small quantities of phosphorus (gr. 1-200). Nuclein, however, which is a phosphorized proteid, will serve every purpose, and if each day the child receives ten drops of nuclein, two drams of sanguiferrin, and half a grain of calcium lactophosphate, in addition to the indicated food, marked improvement will be noted within two months. Iron arsenate is excellent if anemia persists.

Special derangements will have to be met with the proper remedy as they arise. Cascara may be called for to control constipation, but fruit juices, oatmeal water and sweetened saline laxative will ordinarily suffice

An excellent laxative for young children is prepared as follows: Take of good prunes and Smyrna figs, one pound each. Stone the prunes, add one pound of white

sugar and a quart of water, stew slowly for an hour in a double covered container. Now add two ounces of Alexandria senna leaves and simmer the whole for half an hour more. Press, strain and add water to make one pint and a half. Two to three ounces of tasteless fluid extract of cascara may be added. The dose of this is one dram at night. It is easily exhibited and effective.

Bryonin, gr. 1-67, morning and night, also is a useful laxative for children, while the sulphur laxative combination is especially indicated in rachitis. Salt sponge baths and enemata will be markedly beneficial. As soon as the child can eat, have it fed whole-wheat bread crusts, rye bread, and the now easily obtained Swedish "health-brod."

Early attention should be paid to deformities, the proper apparatus being applied at the first moment possible or advisable.

SCORBUTUS (SCURVY)

This disease is practically unknown in some parts of the United States, but like rachitis is not infrequent in the larger cities and Southern mill-towns. Children fed upon the proprietary foods on the market are more prone to be afflicted with scurvy, improper preparation having of course much to do with this. Condensed-milk babies are very apt to be scorbutic. The disease makes itself apparent about the sixth or seventh month, when improper feeding has been begun early, or after some months' use of the food where its use occurred after weaning.

It is not difficult to recognize scorbutus. The infant is anemic and cries frequently. The gums are swollen and bleed easily and the joints also are distinctly swollen. Hemorrhages (subcutaneous) occur and ecchymoses are generally to be noted on some part of the body. Minute hemorrhagic patches are found on the mucosa; in rare

cases bleeding from mucous surfaces is profuse (epistaxis). Hematuria may occur, and various paralyses complicate some cases. The eyes are apt to protrude and separation of the epiphyses is not uncommon. Rachitis may coexist. Prognosis is fair where case is treated early; poor in later stages.

Treatment.—Dietetic, chiefly. Meat juices, fruit and well-cooked vegetables are essential. Orange juice is especially valuable, and here sanguiferrin and nuclein are of particular service. One dram of the former is given between meals and nuclein, ten drops, should be placed under the tongue or given hypodermically morning and night. Grape juice has been found of real value, and buttermilk also is worth trying. Quinine hydroferrocyanide, gr. 1-67, with arsenate of iron, gr. 1-67, may be given prior to and after meals, respectively. Brucine may be added to the quinine (gr. 1-134). Hamamelin, gr. 1-6, eupurpurin, gr. 1-6, or tannin, gr. 1-6, will be of use: any one or the three in alternation every three hours. The bowel must receive attention, always, and enemata of decinormal salt solution are to be recommended. Hematuria yields to hamamelin and small doses of ergotin. A good preparation of triticum repens (one-half to one dram) in barley water also controls this symptom. Sun-baths are desirable and salt sponge-baths of service. Gentle massage of the joints will prove helpful. In cases with poor circulation give cactin, gr. 1-67, every four hours for a week. Select the remedies indicated and give them to effect, remembering that only persistent attention to the smallest detail will enable you to make a cure.

DIABETES MELLITUS

Practically unknown in children under one year, though one death is reported at five months and another at eight. Hereditary tendency exists and in such cases starchy and

saccharine foods are apt to set up the disease. Polyuria may be the first symptom, the child's napkins having to be changed as many as twenty times daily. Older children wet the bed and their clothing almost regularly. The mouth appears red and the mucosa glossy, thirst is excessive and the skin looks dry, and often bran-like particles are being shed constantly. The child is always ready to eat, but has difficulty in emptying the bowels, some children, unwatched, having only one or two movements a week. Eruptions, "styes," boils and pruritic conditions of the skin at the flexures are common. Headache, "pain over the eyes," backache, inability to see clearly, and sleeplessness will be complained of by older children. Anemia is evident, and in most cases there is more or less edema (localized and transient). The reflexes are diminished, and later the child may become semiblind and irresponsible. Furunculosis is perhaps one of the most general and troublesome symptoms. The urine is typical. The specific gravity may be 1030 or 1040, and there may be present 5 to 20 percent of sugar. Acetonuria is not uncommon.

Diagnosis should not be difficult, though we must exclude diabetes insipidus and the glycosuria due to improper diet. The prognosis in very young children of unhealthy parentage is bad; in older children, seen early, it is decidedly favorable.

Modern methods of treatment enable us to save three patients where but one would have survived ten years ago. Death may occur from exhaustion, in coma or from some intercurrent disease such as pneumonia, phthisis florida, etc.

Occasionally the physician does not see the child until diabetic coma has set in. The patient lies rigid and cyanotic, the pulse is irregular and rapid, and breathing shallow and sighing in character. The reflexes are lost

and the pupils apt to be equally dilated, or contracted but fixed. As a rule there is lowered temperature, but this symptom is inconstant. The breath smells peculiarly like chloroform and will alone lead to a diagnosis. Death usually follows despite our efforts. However, some patients may be saved and no step should be left untaken to restore consciousness.

Treatment.—Even in children dietary limitations can be maintained. Fats and proteids are allowable, but sugar and starchy food must be interdicted. A well-cooked gruel of oatmeal to which egg albumen is added will prove satisfactory. Meat broths and gluten bread with butter afford variety, and lean, rare meat may be given chopped or scraped. Spinach, turnip tops and water-cress will be eaten by older children, and buttermilk or sour milk may be used as a beverage. Young infants must have a little milk and thin broths, albumen water, etc. (See "Marasmus.")

The epsom salt sponge-bath is invaluable; give it night and morning, following with an alcohol rub.

Under proper diet the sugar will soon disappear from the urine, but iridin, gr. 1-6, with one of the triple arsenates granules should be given three times daily after food.

I have caused sugar to quite disappear under the following medication, the weight slowly increasing each week: Iridin, asclepidin, eupatorin, and iron arsenate, one granule each every three hours while awake. Nuclein, six drops before food, and a saline purgative draught on arising each morning. The specific tincture (eclectic) may be used, but I find the granules of the active principles more positive and convenient. Apocynin, gr. 1-12, may be added in well-marked cases with constipation and hepatic torpidity.

I wish here to call attention to the value of jambul in infantile diabetes. Two to three drops of the fluid

extract, t. i. d., often produce immediate results. As the main difficulty frequently is to maintain an impression, it is well to have two or three effective remedies. After a week or two of jambul the other drugs named seem to act with redoubled vigor.

Alcohol frequently is advised. I have never seen a case in which it was beneficial but many in which it proved distinctly harmful. Arsenic bromide will occasionally give better results than any other drug. The use of codeine is rarely permissible in the treatment of children; we can do so much better with other drugs.

Treatment of Diabetic Coma.—Intravenous (or subcutaneous) injections of a solution of sodium bicarbonate together with high enemata of normal saline solution will be the main immediate procedures. Sodium bicarbonate, grs. 2 1-2; sodium chloride, dr. 1; sterile distilled water, ozs. 32, should be thrown into the loose tissues with a large needle or direct into a vein. (One to two pints may be used.) The bowel is flushed with plain water and a colon-tube passed through which a quart or more of saline solution is injected. Pilocarpine, gr. 1-6, and cactin, gr. 1-67, are given hypodermically, first of all, and the urine is drawn and four ounces of a weak solution of sodium bicarbonate thrown into the bladder. The wet-pack is almost always necessary, its early and thorough application often saving life. If the patient recovers consciousness, regular procedures will, of course, be instituted.

CHAPTER V

DISEASES OF THE STOMACH AND BOWELS

CYCLIC (RECURRENT) VOMITING

This peculiar disorder is probably of nervous origin, though metabolic disturbance with excessive formation of urea has been advanced as the cause. Holt points out the fact that the ordinary ratio of urea to uric acid —54 to 1—becomes early in the attack as 150 to 1.

Children from two to eight years of age are chiefly affected and the attacks may come on every few months. The vomiting is dynamic and continuous and lasts for from one to four days. For a day or so prior the child is likely to be listless and refuse food; thirst is complained of, however, and the head aches. Some children speak of a "crawling feeling" in the epigastrium. They prefer to lie down, and sometimes there is fever, and the tongue will be found to be slightly coated. Suddenly, perhaps after drinking water, the vomiting commences and recurs every half hour or hour. The vomitus at first is of an ordinary character, but after a few hours is mixed with mucus, tinged with blood and bile-laden. The reaction is acid. If an elevation of temperature has existed it usually falls after six hours and a subnormal temperature is likely to prevail, together with great depression throughout the attack. Food or water is instantly rejected with violent retching.

Diagnosis—It is not at all an easy matter to distinguish cyclic vomiting from the variety which accompanies meningitis or the exanthemata. History may help us

and the falling of the temperature together with lack of typical symptoms will later enable us to come to a conclusion. However, many first and second attacks have been diagnosed as "gastritis." There is no tenderness over the abdomen, however. The prognosis is good. Rarely has death followed.

Treatment.—If the attack has commenced, small doses of cinnamon water alternated with large doses of sodium bicarbonate in solution should be given. Faradization of the pneumogastric and epigastric region may be tried where possible. One of my cases was controlled by a copious draught of very hot cinnamon water. I am inclined to think that a minute dose of cocaine, or cerium oxalate, grs. 2, and cocaine, gr. 1-24, would prove effective. Orexine tannate has been lauded.

Before the attack a few full doses of calomel and podophyllotoxin (gr. 1-6 each half-hourly for four doses), followed by a magnesium sulphate flush, ought to prove preventive. Asparagin, gr. 1-3, or arbutin, gr. 1-3, with lithia water, t. i. d., will suggest themselves as likely to relieve renal congestion and it might be an excellent idea to add gr. 2-67 of codeine to the above.

GASTRALGIA

Pain in the abdomen occurs in many diseases and often demands relief. Care must be taken not to confuse gastric pain with intestinal colic, many children describing both conditions with the term, "pain in my stomach." Indigestion, chill and drinking of ice-water when the person is hot are the main causes of true gastralgia, but sometimes it occurs without discoverable cause and at somewhat frequent intervals.

Treatment.—If there is any reason to apprehend that the patient has a loaded stomach nothing will give such prompt relief as a hypodermic, gr. 1-20 to 1-10, of

apomorphine, Hyoscyamine, gr. 1-500, or my "calmative" formula will prove the only remedy needed in cases due to congestion, though hot compresses may be applied externally with great advantage. Withhold food for twelve hours and then give very light diet—preferably fluid. The child should be kept in bed well covered; the bowel may be flushed with warm water. In cases which are persistent and severe give 5 drops of spirit of chloroform with the same amount of compound tincture of cardamom in a little hot water. One of the chlorodyne granules dissolved in hot water may be substituted. Menthol, gr. 1-12, with a little hot water, is sufficient for the milder pains of young children.

ACUTE GASTRIC INDIGESTION

It is not difficult as a rule to recognize this condition. A few leading questions and the discovery of a tense abdomen with fever and nausea will usually lead us to a correct diagnosis. Vomiting of undigested food may have occurred already. Acute gastritis must be regarded as a possibility, but, a few hours will decide the question; this condition is extremely unusual.

Treatment.—Give gr. 1-10 apomorphine hypodermically, and empty the stomach; wash out the bowel and order calomel, gr. 1-3, podophyllin, gr. 1-6, half-hourly for six doses and a saline cathartic two hours after the last dose. Hourly administer papayotin, gr. 1-6; this may be discontinued when the saline is given, as the stomach will by that time be empty. A few doses of the sulphocarbolates (gr. 1-2) may be given subsequently if there is any reason to suspect intestinal fermentation, otherwise *rest the stomach for twenty-four hours*, allowing only albumen water, milk and lime water or barley water. In young children the latter is important. The second day light nutritious broths or peptonized foods may be

given and the third day it is allowable to return cautiously to the ordinary food. Sometimes the pain is severe, then heat externally and the "calmative" or chlorodyne, in dose according to age, will be indicated. The former is most desirable. Do not confound this acute and temporary condition, usually met with in children over three years of age, with the chronic dyspepsia gastrica which is dealt with later.

ACUTE GASTRITIS

Catarrhal, membranous and ulcerative forms are met with. It would be quite possible to treat children for years and never see a case and yet any general practician may meet such a condition any day, anywhere. The stomach is rarely involved alone, gastroenteritis usually existing. Gastritis due to ingestion of corrosive or very hot substances will call for lavage (be very careful with the tube in these cases) and the exhibition of bismuth and calendula; the resorcinated preparation, "calenduline," serves nicely. Bismuth subnitrate is, without question, the most useful drug in most cases; grs. 2 to 5 may be given every three hours with water. Lac-bismo is generally obtainable and is a nice preparation and easy to exhibit.

Ulcerative Gastritis, marked by the vomiting of mucus and blood, demands limited diet, lavage with hydrogen peroxide solutions, glycerinated (hydrogen peroxide one ounce, water eight ounces, glycerin one-half ounce), two pints being used, and the exhibition every two hours of silver oxide, gr. 1-12, and hydrastin, gr. 1-6—alternating the two. Hyoscyamine will control the pain, and small doses of aconitine may be used if the temperature exceeds 100° F. It may be well to feed per rectum for three days.

Membranous Gastritis.—This usually is seen with enterocolitis or may be due to diphtheria or pseudodiph-

theritic processes. The presence of a false membrane is the only distinguishing feature. In all these conditions, save corrosive and toxic gastritis, we cannot at first be sure of our diagnosis, and therefore have probably treated the case for acute dyspepsia, gastroenteritis (which see), or enterocolitis. If the pain remains intense and we are able to assure ourselves that the stomach is directly involved, the conditions should be carefully studied so that we may give the exact remedies required. All gastric disorders are more or less obscure and many a "chronic dyspepsia" has been set up by improper treatment of a simple congestion.

In *congestion of the serous coat* we usually find hiccough, vomiting of a greenish serum, fever, rapid pulse and a "pinched" face. The slightest pressure over the stomach causes pain. Nothing will do so much for the patient as hyoscyamine, gr. 1-500 every hour for three doses (in very severe pain use H-M-C, Abbott, half a tablet, hypodermically) and the application of moist heat. Other treatment as suggested.

When the *mucous coat* is primarily involved the patient complains of a burning which extends to the throat, is thirsty, loses all desire for food and has slight recurrent rigors, followed by "waves of heat." Headache is a common accompaniment. After the preliminary "clean out" a few doses of aconitine and xanthoxylin will often give great relief; veratrine should rarely be used, as it increases the pain; quinine hydroferrocyanide, gr. 1-67 every four hours, stops the chilly sensations and aids in restoring tone. Where the musculature is involved there will be cramping pains which shoot to the back. Here strychnine, gr. 1-134, and hyoscyamine, gr. 1-500, alternated with cicutine, gr. 1-134, will give relief. It is essential that the stomach be rested for several days. These symptoms are, of course, only noted in children over

five years of age. In infancy we can only observe symptoms and meet them as experience teaches.

CHRONIC GASTRIC CATARRH (DYSPEPSIA GASTRICA)

This is a condition which we frequently have to contend with, and he is a clever man indeed who can say just when catarrhal gastritis ends and gastroenteritis begins.

In infancy there is repeated vomiting of food and mucus, the matter ejected frequently having a sour or fetid odor. The little one fails and shows evidences of pain, and he is medicated for "sour stomach" or colic by parents and "wise women." In a few days the stools become fetid or greenish and streaked with mucus; in some cases early constipation is quite troublesome, but these stools may be mucus-coated. I have noticed that where the child is constipated, vomiting is not frequent, showing greater involvement of the intestine, and later on we shall invariably find the picture change and green, stinking stools with masses of mucus enable us to make a positive diagnosis.

The earlier stage may well be considered separately, for if we can control conditions early much trouble will be avoided. The cutting of teeth and overfeeding are the most frequent causes; bacterial invasion (impure milk, dirty bottles or nipples) makes a close second. Feeding farinaceous foods when the child is unable to digest them also is a frequent cause; we must also sometimes attribute the trouble to the milk furnished by mother or wet-nurse. Rarely is this the case, however.

At the time of weaning, when parents persist in giving the baby food from their own plates and cease to be particular as to cleanliness of the mouth, etc., we get another

rich harvest. Hence the saying that the second summer is so fatal to babies: *it is*, for the reasons given. The doctor needs to be inquisitive and persistent—it is not always easy to get at the exact truth—and he will find that a careful dieting, preceded by a day's starvation, will do more than medicine. I would suggest a careful reading of the chapter on "Feeding of the Infant" and the sections on "Marasmus" and on "Malnutrition." Not infrequently the doctor is called when the child is at death's door and a single mistake may mean "finis."

It is essential, even in milder cases, that irritating foods be forbidden. If on the breast (wet-nurse), change promptly; if the mother is feeding the child and her milk disagrees, secure a healthy wet-nurse or feed artificially. Begin by gently washing out the stomach, especially if overfeeding has been acknowledged.

Give the infant a few teaspoonfuls of this solution: saline laxative, one teaspoonful; water, eight ounces; saccharin, one-half granule. An hour later give a small feeding of barley water, to which a small quantity of milk may be added, where milk has not markedly disagreed. Or give the white of an egg stirred slowly in a half pint of water, slightly sweetening with milk-sugar. If diarrhea is a feature, this is imperative. Prepared ox-blood (or fresh beef juice) may be added to either, or a few drops at a time alone in serious prostrations. Thin, clear chicken or mutton broth (one to two ounces) may be fed once daily if milk is not taken. The secret is to cut off the food which causes trouble and find a diet which does agree.

Vomiting following the giving of cereal foods often stops after a few spoonfuls of cool milk and water and the substitution, gradually, of the latter. Pure, cool water should always be given freely, to these little ones, between feedings. Lime water may be added to the milk

or milk-foods. Occasionally breast and cow's milk are not tolerated, and in such cases the child generally thrives upon some one of the infant's foods of the market. In most instances we shall find that the latter have been given too early or in too rich a form and a return to peptonized or modified milk or thin cereal gruels will prove curative.

In violent cases wash out the stomach with resorcin, one grain to half a pint of water and give an hour later a little barley water with ten drops of beef juice. Those who decry calomel have no opportunity to note its universal and positive efficacy when exhibited in these cases—1-10 grain hourly for four hours every other day may be administered. This drug—with the saline laxative—often will prove all that is required. Occasionally where hepatic action is below normal, a granule of iridin, gr. 1-12, or podophyllotoxin, gr. 1-12, may be added to every other dose. Bismuth should never be given till the primæ viæ has been emptied with calomel and salines. Rarely pepsin is of advantage; papayotin serves better, in my experience, 1-6 grain before and after feeding, doing good service. Quassin or hydrastin, gr. 1-12, may be added to the before-meal dose as a bitter tonic; or juglandin may be used where gastric atony is marked. I have never, in my practice, found hydrochloric acid beneficial in infancy.

In older children chronic gastritis or "dyspepsia" causes much trouble. It may have followed frequent acute attacks or be due to overeating or improper feeding. The derangements which accompany the condition are too numerous to list: fever, anorexia, headache, diarrhea, constipation, anemia, foul tongue and breath (exclude decayed teeth or oral ulcer), asthma (reflex), and vomiting are the most common. Here, again, simple, positive medication works a prompt change for the better.

For children under ten give blue mass and soda, gr. 1-2, (or calomel, gr. 1-6), and podophyllotoxin, gr. 1-12, hourly from five to nine p. m., and the next morning exhibit a saline laxative. The bowel will be moved twice or even three times; if it is not, repeat the saline at noon. Now place the child upon brucine, gr. 1-134, juglandin, gr. 1-6, before each meal, and the papayotin compound combination, one tablet after eating. Between meals order hydrastin, gr. 1-6. If debility is very marked, sanguiferrin, one dram, should be given with each meal. In three days repeat the calomel, etc. In ten days or two weeks the change will be very marked and it is then well to order one or two tablets of the triple arsenates with nuclein, after food, in place of the other tablet. The hydrastin may also be stopped and xanthoxylin, gr. 1-6, given instead.

Tubercular patients will require regular treatment for tuberculosis. If flatulence proves troublesome, oil of cajeput, gtt. 2 on sugar, will relieve it, or the calmative combination will serve. Diarrhea yields in two or three days to 2 to 5 grains of the sulphocarbolates ir solution between meals. Intestinal antiseptics are almost always required and nothing equals the sulphocarbolates of zinc, lime and soda, either alone, as specially indicated, or together in proper proportion as in the intestinal antiseptic, W-A.

ACUTE GASTROENTERITIS

There can be no question that the more serious forms of enteric disease can be avoided to a great extent (and controlled promptly and positively when they do present) by modern methods of medication. Many of the cases of "summer diarrhea" which terminate fatally could have been easily controlled in their early stages. Even cholera infantum in its typical form (which after all is

rarely encountered) will yield readily to proper therapeutic measures during the first twenty-four hours.

Children who have been prone to looseness of the bowels, during the months of July, August and September are, under the care of the well-informed practician, enabled to pass from spring to winter without any marked disturbance of the alimentary tract. A certain increase in the number or altered consistency of the stools is to be looked for when the fruit season arrives, and with the advent of spring and "green things to eat" the average human being finds his bowels moving more freely. This is desirable and normal. Two or even three loose stools per day should not be regarded as pathological, but at the first sign of enteric disorder—colicky pain, frequent passage of thin, watery or pasty, stinking stools—treatment should be instituted.

The doctor should impress upon his clientele the positive necessity for prompt treatment. He should especially explain to young mothers the importance of an early recognition of acute enteritis, pointing out the fact that in many cases life has been sacrificed simply because the doctor arrived too late. Often the little patient, stricken twenty-four or thirty-six hours prior with acute gastroenteritis (or cholera infantum), will succumb to cerebral congestion after diarrhea has been checked and other distinctive features of the disease eliminated. Others pass into the sleep that knows no waking from sheer exhaustion, within the same period. If early and correct treatment is called for more urgently in any one disorder than another it is in acute gastroenteritis.

This disease is very commonly and mistakenly termed cholera infantum, the latter being an entirely different and much more serious malady. The writer has not seen half a dozen cases of true cholera infantum in five years. Acute gastroenteritis is, however, omnipresent.

The symptoms vary in severity and are known to every practician. The bacteria discovered in a given case may be numerous—streptococcus, the colon bacillus, staphylococcus, bacillus proteus, pyocyaneus, etc.—any one or a variety of these microorganisms being distinguishable in the stools. As, under medication, the frequency of the latter lessens, the severity of the symptoms moderate.

Two forms of the disorder are recognizable, one mild, the other severe.

In the first case the child (who may be teething) shows signs of malassimilation: food passes through the bowel imperfectly digested, accompanied by much gas, and attacks of vomiting occur. After a day or two the vomiting and stools become more frequent, the latter bearing either a greenish brown slime or consisting of a greenish or dirty-gray fluid.

Still later there may be much mucus streaked with blood. The smell of such stools is most offensive. Throughout, the child is fretful and complains of cramping pains, or, if too young to do this, draws its legs up and screams. The skin is hot and usually dry and the temperature in mild cases rises one to two degrees. Occasionally vomiting is altogether absent; in others diarrhea does not appear for some hours after vomiting and other evidences of gastrointestinal inflammation.

In the severe forms all these conditions are accentuated. The temperature may reach 103° F., and as many as fifteen or twenty stools be voided in the twenty-four hours. I have noticed that such cases usually begin with obstinate vomiting and the passage of one or two stools containing much undigested food. The vomitus at first contains sour food-material and later is a foul fluid containing mucus and bile. As the child is extremely thirsty and craves for water, the abundance of the fluid can easily be accounted for.

This disease affects alike the bottle- or breast-fed infant and the child on mixed diet. While improper feeding is without doubt the usual cause, heat and bacterial invasion of an exhausted system are alone responsible in many instances.

The disease must be looked upon as mildly infectious and the stools and vomited matter should be carefully disinfected. The affected child may gradually waste and become almost a skeleton or, after a few days, the disorder abating, recover rapidly. In very marked cases death may take place within forty-eight hours. In some cases two or more such attacks occur in the one season and not at all infrequently enterocolitis sets up.

Treatment.—Knowing, as we do, that the whole chain of symptoms is due to the presence of undesirable material and bacteria and that no gross pathological lesions exist, treatment is really simple, but to be effective it must be of a positive character.

As in cholera nostras, we have to get rid, as fast as we can, of the fermenting, germ-breeding, toxic bowel-contents. Further, being aware of the presence in the rugæ of the intestine of millions of pathological microorganisms, we must not put into the alimentary tract material favoring germ-propagation. We must also exhibit in effective doses intestinal antiseptics of an astringent character.

The first step is to stop all food and wash out the lower bowel with either a plain, cool, salt or mildly alkaline antiseptic solution. If the vomiting is marked pass a catheter into the stomach and wash it out; as this is not always feasible, give a mild solution of magnesium sulphate slightly acidulated and sweetened with saccharin. Saline laxative (alkaloidal formula), one small teaspoonful to the half pint of water, works perfectly. It is well to give gr. 1-10 to gr. 1-6 of calomel and gr. 1-12 to gr. 1-67 of podophyllin half-hourly for four to six doses, according

to age of child, to secure a thorough emptying of the intestine and increased hepatic activity. This is the "first thought." One dose should be given before anything else is done and the physician himself (unless a competent attendant is present) should then give the enema. One hour after the last dose of calomel, exhibit a fairly full draught of saline laxative. This serves to flush the already cleaning intestine and leaves the mucosa in good condition to withstand bacteria and absorb such nutritive material as is allowed.

During this time, if the skin is hot and dry, have the child sponged hourly and covered lightly with a thin flannel garment. It is to be kept in a cool, shady place. Barley water, made thin, will prove the best drink at this period. Every two hours at least one grain of the combined sulphocarbolates of lime, sodium and zinc should be given—preferably in solution. A mentholated saccharinated tablet is obtainable which serves excellently. In bottle-fed infants this solution may be given from the bottle, as also may the laxative saline draughts. In older children, the powder, mixed with a little sugar of milk, may be given on the tongue and a drink of boiled (or barley) water follow.

Very minute doses of atropine (or hyoscyamine) are of great service during the first day: gr. 1-250 may be dissolved in six teaspoonfuls of water and a teaspoonful given every two hours. If this treatment is carried out, the next day will reveal a recovering patient. But here care means everything: the sulphocarbolates must be continued, the lower bowel flushed and the mouth kept clean. Albumen water, barley water containing a few drops of fresh beef juice, or a few spoonfuls of a well-cooked cereal gruel may be given. Zwieback is safe and well liked by most children. Under ordinary circumstances this diet may be slowly but surely added to until

normal feeding again prevails. Brucine, gr. 1-134, or hydrastin, gr. 1-6, may be given as a bitter tonic for a few days. It is also a good plan to institute about the fourth day another course of calomel and podophyllin; or in place of the latter iridin, gr. 1-6, may be given hourly for four hours. If the stools are markedly offensive and clay-colored add bilein, gr. 1-12, to every other dose. The effect is immediately noticeable.

In a few cases hyperacidity is marked; here calomel and soda (aa. gr. 1-4) acts rapidly. Should the condition persist, a few doses of "neutral cordial" will promptly prove corrective.

It should not be forgotten that in all these cases more or less local congestion exists; atropine is our best remedy for localized congestion, bringing, as it does, the blood to the surface. Moreover, this drug stops the excessive secretion of mucus—another desirable feature. It is always well to give fairly full doses of atropine *at once* when the skin is cold and pale; cactin and brucine (aa. gr. 1-67) will perhaps prove the best subsequent stimulants.

If the disease has progressed and weakness is marked, nuclein is strongly indicated; six to eight drops should be given under the tongue thrice daily. It is in these cases, too, that rectal injections of beef juice and starch water prove so valuable.

In those cases where the system has been deprived of large amounts of serum, enteroclysis is imperative, and here decinormal salt solution with two drams of prepared blood to the pint proves especially very valuable.

It is well in all well-marked cases to give thin, clear beef- or chicken-bouillon for the first day or two after normal conditions are restored, returning to milk very gradually.

CHOLERA INFANTUM

The direct cause of this disease is yet to be discovered, but unquestionably there is a distinctive toxin generated and in nearly every case we can trace the origin of the disorder to impure milk. Postmortem changes of the intestine are few, sometimes undiscoverable. High temperature, profound prostration and profuse diarrhea, the stools at first being mucoid, then serous and bile-stained, mark the disease.

It has been noted that children who have shown signs of bowel-trouble earlier are particularly apt to contract cholera infantum in their second summer. The yellowish, greenish brown or serous stools are not particularly foul but possess an unmistakable odor which, once smelled, will never be mistaken for anything else. Thirst here is intense, the body-fluids being drawn upon so pronouncedly. The nervous system is profoundly impressed, a child stricken in the morning presenting at night every sign of exhaustion; convulsions are far from infrequent, and in some cases accompany each stool. The skin often is cool and clammy while the thermometer shows a rectal temperature of 103° to 105° F. The sunken eyes, depressed fontanelles and drawn mouth, together with the cadaver-like feeling of the skin, are diagnostic.

As already pointed out, it is not uncommon for the physician to check the diarrhea and vomiting, only to see his little patient succumb to cerebral congestion or profound toxemia. Not infrequently young practicians mistake cholera infantum for meningitis and the mistake in every case proves fatal. Treatment here, unless instituted early, is not satisfactory and equally is this the case if exactly the proper steps are not taken.

It is not always an easy matter to medicate, everything given by mouth being promptly vomited. How-

ever, we are able to overcome this by the "small dose, oft repeated."

As soon as the child is seen, gr. 1-500 of hyoscyamine or gr. 1-1000 of atropine is given in the form of solution which is dropped on the tongue.

The infant is placed in a warm bath of magnesium sulphate solution (one ounce to the quart), ten drops of creolin (or carbolic acid) being added. With this the entire body is sponged while the physician prepares to administer a high enema. One ounce of pure olive oil, to which two drops of oil of turpentine is added, should be thrown into the rectum and, very slowly, a pint of warm decinormal salt solution is injected just within the internal sphincter, pressure being made on each side of the anus with the fingers. The infant's legs and buttocks are raised slightly so as to allow the oil and water to ascend. This fluid is voided forcibly and then, with great care, the doctor passes well up beyond the sigmoid flexure a large catheter attached to a bulb-syringe by a "glass dropper" barrel. (An almost indispensable irrigation outfit has lately been devised by Dr. Sourwine, of Brazil, Ind., the possession of which renders this work easy.) Through this from one to two pints of a solution of the sulphocarbolates (40 grains to the pint) is thrown into the intestine. The solution should be at body-temperature or a little below. This thoroughly washes the bowel while the fluid remaining serves to inhibit spore-growth. In very severe cases this procedure has turned the tide. The child is dried well and wrapped in flannel but kept in a thoroughly airy place.

Having done all this it is time to try further medication and (unless the case has advanced far) here, again, nothing will prove as thoroughly efficient as gr. 1-10 to 1-6 of calomel every fifteen minutes for six to eight doses. The granule, if given with cold water, is rarely vomited;

the preliminary dose of hyoscyamine or atropine will have inhibited the vagus and vomiting will not be apt to give trouble. If it is extremely persistent give gr. 1-500 of atropine hypodermically. Give hourly gr. 1-3 to gr. 1 of the sulphocarbolates in solution or, failing these, gr. 1-1000 of copper arsenite in solution. Zinc sulphocarbolate will perhaps prove preferable where the stools are very profuse and serous. However, the writer rarely finds the accepted proportions of the combined salts as present in the intestinal antiseptic tablet undesirable.

Here is the one positively efficient treatment of the dread disease; children so treated will *not* die. Vomiting once controlled, a few doses of strychnine (or brucine), gr. 1-134, and cactin, gr. 1-67, will improve conditions speedily; glonoin, gr. 1-134, occasionally will be required to restore a weakening heart; but as a matter of fact, these few drugs will enable any intelligent physician to save nine out of ten cases of cholera infantum.

Morphine is most distinctly not indicated. Milk must not be allowed for at least thirty-six hours, the little patient (after the vomiting and purging have ceased) being given albumen water, barley water and freshly expressed beef juice or the prepared blood-preparations already mentioned. (See "Feeding" and "Gastric Dyspepsia.") The latter may well be given per rectum after the first twelve hours. Nuclein is indicated from the first and may be given in full doses with advantage. Five to ten drops should be placed in the mouth once every three hours and left to be absorbed.

Here as elsewhere certain niceties of treatment are worth knowing. The "calmative for children" formula devised by me is of value in all the bowel-disorders of childhood. It contains hyoscyamine, gr. 1-500; oil of cajeput, gtt. 1-67; oil of anise, gtt. 1-67; menthol, gr. 1-67; monobromated camphor, gr. 1-67; and scutellarin, gr. 1-32.

One of these may be dissolved in two teaspoonfuls of *hot* water and ten to fifteen drops of this solution given every fifteen minutes till the skin reddens and vomiting ceases. *Get reaction, clean out the bowel* and *begin the exhibition of the sulphocarbolates*, and you will win out. No matter how high the temperature, it will come down in a hurry after these procedures. If, however, it remains above 102° F., a few small doses of aconitine are desirable; but this drug should never be given too soon; this would be a serious error. Quite often it is not called for at all, but when it is, always guard the heart with cactin, gr. 1-134.

Warm, dry flannels or other light, hot applications to the abdomen are to be recommended where depression is advanced; cold may also be applied to the head in such cases.

ACUTE ENTEROCOLITIS

This disease is especially troublesome during the late summer months and requires careful and somewhat prolonged treatment.

Shiga's bacillus is unquestionably the prevailing micro-organism and the colon the seat of marked deteriorative changes. Hence the necessity for continuous medication varied to "suit the conditions present" from time to time.

Not at all infrequently, enterocolitis (dysentery) follows upon the heels of gastroenteritis, and sometimes the doctor is not called till this condition has become established. Children from one year of age to seven are subject to ileocolitis; the older the child the more likely is it that the disorder will prove secondary.

As a primary infection enterocolitis is not common among reasonably well-fed children. The early symptoms are apt to be confounded with those of acute indigestion (which see); the two conditions may coexist. There is more or less pain and swelling of the abdomen; the

child vomits perhaps and has several stools daily, preceded by "gripes." The dejections at first are greenish or yellowish brown and carry streaks or are followed by mucus and blood. Later there is more mucus than fecal matter and blood may be plentiful. The seat of infection is invariably the colon, but one or more feet of the ileum (above the ileocecal valve) may also suffer. Occasionally the enlarged follicles of the large bowel ulcerate and pus presents in the stools. We have then a serious condition to combat.

Under ordinary circumstances, if diet is restricted, the little patient begins to mend in from seven to ten days and slowly the stools resume a normal appearance.

On the other hand, each day may see the condition grow worse: the temperature rises (absorption of toxins), tenesmus is marked, and after much pain small mucous and bloody dejections occur. These may be frequent, even hourly. Anorexia is extreme, prostration marked, and the child assumes a skeleton-like aspect. In such cases the urine is greatly diminished and is apt to contain casts and albumin. It is not hard to realize that the organic changes here are profound and recovery is far from probable. Indeed, once such serious conditions obtain, we can expect, even should we be able to control the disease-process, that the child will require close attention for months. In unfavorable cases death occurs, as a rule, within a month.

Here again early treatment means everything. Modern methods instituted within the first two or three days almost invariably prove effective, but great care should be taken as to the diet for the rest of the year.

Treatment.—High enemata of normal salt solution (or better still, a calendulated solution of the sulphocarbolates) are essential. I have for some years utilized a preparation of calendula officinalis, resorcin and bismuth,

known as calenduline, and in every case results have been ideal. Twice daily the intestinal tube is passed (for technic note "Treatment of Acute Gastroenteritis") and three pints of decinormal salt solution or a 1:500 solution of the sulphocarbolates, to which two ounces of calenduline is added, thrown well up into the colon. After *each stool* two drams of a mixture of one dram of aqueous extract of hamamelis virginica and one ounce of water should be thrown into the rectum, pressure being made over the anus with a wad of gauze. This alone usually prevents tenesmus, which is very troublesome when the lower bowel is most affected.

Here, again, extended experience has proved the *necessity* for cleaning out the primæ viæ with small doses of calomel or blue mass and soda, followed by a saline purgative draught. As a first step, therefore, order calomel, gr. 1-6, and either iridin, gr. 1-6, or podophyllin, gr. 1-12, every hour for four doses, and, one hour after the last dose, give a full teaspoonful of effervescent magnesium sulphate. Repeat in forty-eight hours. Exhibit also every three hours hydrastin, gr. 1-6, hamamelin, gr. 1-6, and one or two teaspoonfuls of a solution of the sulphocarbolates—10 grains to the ounce. Juglandin, gr. 1-6, occasionally proves more desirable than either iridin or podophyllotoxin, the indication being marked relaxation and thin mucous stools. Brucine or strychnine will suggest themselves where the disease has progressed and debility is pronounced. In all cases they will be indicated as alterative tonics during convalescence. Nuclein should be added.

The diet must be light, nutritious and free from waste. Gelatin, corn starch, clear soups, albumen water, jellies, beef juice, clam bouillon, and so forth, will afford variety during the acute stage. Arrowroot is desirable, as is also the ground lentil.

Nothing known to me equals a gruel made of boiled flour. Tie two pounds of dry flour tightly in a piece of linen and boil in plenty of water for five hours. Hang up the bag to dry; remove the linen and split the doughy paste covering the dry flour. Grate fine as needed and prepare a gruel in the usual way. This proves an ideal food in all gastrointestinal derangements, and marasmic infants often grow fat on it.

Glonoin and cactin will prove more efficient stimulants than brandy or whisky, which usually do more harm than good. Atropine or hyoscyamine will, in every case, produce prompt reaction and stop vomiting within two hours. The "calmative" formula already mentioned is ideal here.

Sugar and starchy foods should be given with caution for some time after the bowel has resumed normal conditions, and it is well to flush the intestines every third day for at least a month. In old-standing cases it may be necessary to sustain life with small quantities of prepared blood-preparations (sanguiferrin, bovinine, liquid peptonoids), predigested cereal gruels, albuminous preparations, barley water, clam broth and zwieback. The latter will be digested when everything else causes trouble. Massage over the abdomen is of great benefit in all enteric troubles. It should be done with the hand moistened with olive oil.

In older children, where appetite leaves early and refuses to return even after everything else seems normal, quassin, gr. 1-3, and nux vomica and capsicum, half a tablet, an hour prior to meals, rarely fails to produce desired results.

CHRONIC DYSENTERY (ILEOCOLITIS)

In nearly every case this condition follows the acute form (which see). The ileum and colon may be catarrhal

merely or ulcerated. The disease is always serious and often extremely rebellious to treatment, returning time after time after some exposure or dietary indiscretion. The symptoms are pain of a colicky character, distended abdomen, constant presence of flatus and the passage of numerous stools which are thin, mucus-laden and greenish or brown in color; particles of undigested food will invariably be found unless the child is on appropriate diet. Weakness increases rapidly, the body becomes thin and the skin colorless; the child is extremely fretful and not infrequently presents sores about the mouth and nose. The diagnosis of "worms" is often the result and so medicines are given which aggravate the disease. In tuberculosis fever is usually present, but not so in dysentery, a subnormal temperature being more frequent here. However, careful consideration must be given every case.

Treatment.—Proper diet, strict attention to the general health, and high enemata of mild alkaline astringent solutions are the main points. The food must be highly nutritious, free from waste, and a little every three hours is preferable to full meals.

Predigested cereal gruels, albumen water, bouillon, egg flips, custards, well-boiled rice, sago, tapioca, somatose, jellies, arrowroot, albuminized food (Eskay's) and raw, scraped beef afford a variety of food. A small quantity of stale wheaten bread or zwieback may be allowed daily. Milk is usually well borne and may be the main article of food. Junket is excellent.

The bowels should be gently massaged at night and on rising with the hand dipped in warm olive oil, and a flannel band worn. Once daily (after stool) pass a tube and inject one pint of a solution composed of colorless solution of bismuth and hydrastis (Merrill), one ounce, and water, 15 ounces. Have it retained as long

as possible by elevating the hips and pressing the anus. Calenduline may be used similarly. Later, as the disease is controlled, sodium sulphocarbolate, thirty grains to the pint, will give excellent results.

Internally half a "calmative" tablet in water twice daily, to relieve the congestion and flatulence, following in half an hour with: Strychnine, gr. 1-134; hydrastin, gr. 1-6; collinsonin, gr. 1-6. After each stool give zinc sulphocarbolate, gr. 1, with menthol, gr. 1-12, and four ounces of water. Or dissolve two of the intestinal antiseptic tablets (mentholated) in four ounces of water and give two teaspoonfuls. In some few cases the stools are so frequent that codeine, gr. 2-67 to 1-12 will have to be added to each dose of the above. In case of a recurrence after two or more weeks, "clean out" in the usual manner (following the calomel with castor oil instead of saline), and for twenty-four hours give emetine, gr. 1-67, and codeine, gr. 2-67, every three hours; then treat as above.

If called to a severe case of this type with collapse, wash out the bowel with a warm solution of salicylic acid (1 : 2000) and then throw into the bowel six ounces of silver nitrate solution (1 grain to 6 ounces of water). Give sanguiferrin, 1 dram, every two hours, cactin, gr. 1-67; brucine, gr. 1-67; piperin, gr. 1-6, four times daily. Into the rectum (after irrigation) insert a suppository containing extract of hyoscyamus or of belladonna. Should these measures not control tenesmus and frequent stools, give hypodermically one quarter of a hyoscine-morphine-cactin tablet. In extreme cases I have found twenty drops of cognac every hour to act well.

AMEBIC COLITIS

A condition present more often than is supposed. The amœba coli will be found in the stools and the colonic

ulcers which exist. Fever and diarrhea come on suddenly, disappear after a few days, only to recur at irregular intervals. The pain during the acute stage is marked, and tenesmus severe. Unfortunately diagnosis is made with difficulty and the patient is apt to be treated for anything but the right disorder. Always examine the stools in cases presenting such symptoms.

Treatment.—High enemata of normal salt solution daily, following with a 1 : 1000 quinine solution. Nuclein, ten drops three times daily, and juglandin, gr. 1-6; quinine hydroferrocyanide, gr. 1-67, half an hour prior to meals. A half tablet of the bilein and pancreatin compound formula (bilein, gr. 1-8; strychnine arsenate, gr. 1-134; pancreatin, gr. 1; sodium sulphocarbolate, grs. 2 1-2; sodium carbonate, grs. 2 1-2) an hour after food. Nutritious diet and outdoor exercise are essential.

DILATION OF THE STOMACH

In children suffering from enlarged stomach there will usually be noted symptoms of imperfect digestion and the unusual contour of the stomach will be easily detected. In doubtful cases give a pint of water and percuss, when the lower edge of the viscus will be found below the normal line, in some instances reaching the umbilicus. It is necessary to differentiate this condition from colonic dilation, though it is possible for the dual condition to exist. Treatment is effective and the prognosis, therefore, good. If motor-insufficiency is very marked and the pylorus obstructed it is well, however, to warn the parents that surgical measures may be required.

Treatment.—Dry diet and the exhibition before meals of juglandin, gr. 1-3; hydrastin, gr. 1-6; brucine, gr. 1-134. After food, papayotin, gr. 1-3, with either capsicin or piperin. The papayotin compound already

described is thoroughly efficient. Have the child wear a snugly fitting flannel belt, so constructed as to make gentle upward pressure. A system of exercises which brings into use the thoracic and abdominal muscles and improves circulation will help greatly. The use of the vibrator is of service.

HEMATEMESIS

The source of the hemorrhage must be discovered. In the newborn the symptom is of grave import. (See "Diseases of the Newborn.") In older children it may issue from the nose, gums or pharynx. Ulcer of the stomach may be the cause, but other symptoms are usually observed in such cases. Bright-red blood should cause a very careful examination. Purpura hæmophilia and the purpuric variety of the acute infections may be marked by hematemesis. With nosebleed we may note bleeding from the upper digestive tract in young girls who have menstruated or are just about to (vicarious menstruation).

The treatment here must be governed entirely by the conditions prevailing. If a child vomits dark masses of blood and has pain in the stomach, stop feeding and nourish per rectum, washing out the stomach carefully every second day with a warm solution of hydrogen peroxide, one part; glycerin, one part; water, six parts, and exhibiting t. i. d. hydrastin, gr. 1-6; hamamelin, gr. 1-3; silver oxide, gr. 2-67, every three hours.

To control the acute condition give atropine, gr. 1-500. In hemophilia it will be necessary to improve systemic conditions generally, exhibiting nuclein, the arsenates, or iron, quinine and strychnine, and calcium chloride, for some weeks. Eupurpurin and collinsonin have some effect, gr. 1-6 of each, every three hours. Feed gelatinous food. (See "Hemophilia.")

Stypticin (cotarnine hydrochloride) gives me good results in mucous oozings and in purpura; give gr. 1-2 to 1 in a capsule every four hours. It may be applied, pure, direct to the bleeding surface. Sanguiferrin and other preparations of ox-blood containing iron, often are indicated. Iron (tincture of ferric chloride) will be preferable alone, in some cases. Beware of setting up constipation, however. Cascara, or aloin, cascara and atropine compound will prove the best laxative.

CHRONIC CONSTIPATION

Distinctly a condition present in many disorders and due to a variety of causes. To relieve constipation temporarily, i. e., to produce stools of a proper character, is usually easy enough, but unless drugging is continued the constipation returns. If we treat the cause, we shall find the effect disappear. To those at all familiar with alkalometric practice and literature the rational treatment of constipation is well known. Briefly recapitulated it is as follows:

Treatment.—Do not exhibit purgatives (or even laxatives) until you are familiar with the physical conditions. Examine the anus and lower bowel; dilate the sphincter ani if constricted; this is easily done by using the graduated hard-rubber dilators in sizes to suit the age. See that the child gets water enough to drink and lay down a proper dietary. Fruit cooked thoroughly, or fresh and ripe, will be allowed for the morning meal; stewed figs or prunes will serve in the winter months. (Under "Feeding," the formula of an excellent "fruit laxative" is given.) A spoonful or two of orange juice may be given at bedtime and a little hot water with orange juice in it exhibited next morning. Regularity at stool is important.

The child should be made to retire at a certain hour. If necessary, insert a glycerin suppository half an hour

earlier and allow the child to lie down till desire is marked. Or glycerin, one dram, water, one ounce, may be injected with a small syringe. Gluten suppositories are useful. If the bowel does not empty thoroughly, the feces being passed in round pieces (scyballæ) or broken, hard lumps, give a copious enema of soap suds. Follow with a saline laxative daily, and after each meal give two sulphur laxative tablets or the following combination (Waugh's anti-constipation): Aloin, gr. 1-25; strychnine sulphate, gr. 1-500; atropine sulphate, gr. 1-2500; oleoresin capsicum, gr. 1-500; emetine, gr. 1-500; bilein, gr. 1-250. One such dose three times daily, together with proper food and enough water, will in nine cases out of ten prove ample. The addition of a small saline laxative draught on rising may be required in stubborn cases. Gradually reduce medication, dropping a granule at midday, then in the morning dose, finally the saline laxative, and last of all, the night-granule. Very young infants will respond to gr. 1-67 of bryonin when everything else fails. One such dose night and morning. Cascara—or cascarin—may be utilized if preferred but is not so desirable for children as it is for adults.

Whole-wheat bread; bran tea, fruit containing plenty of cellulose matter and seeds, together with a sufficiency of butter and fats, are really essentials when the patient is between six and twelve. In atony of the intestinal wall the formula given above usually proves efficient, but in many cases juglandin, gr. 1-6, given before meals, works a prompt change for the better. Never let a child get into a routine treatment. Find out just what conditions you have to alter and give what should be given, restoring normal function just as soon as you can. Warn mothers against the "castorias" and laxative syrups of the drug-store. they invariably make the case more difficult to cure.

INTUSSUSCEPTION

Occasionally diagnosis has not been made till post-mortem. This should not have occurred. The usual seat of lesions is at the ileocecal valve, but enteric or colonic invagination may present. The condition is well understood, one portion of the bowel being invaginated into another just as a glove finger slips into itself. The symptoms are characteristic and can hardly be mistaken.

Boys are more often affected than girls and the majority of cases occur before the fifth year. From the sixth to the twelfth month is the real danger period. The stoppage occurs abruptly, vomiting begins, and evidences of severe pain, paroxysmal in character, will be noted. One or two loose stools will be voided, followed later by mucus and blood. The vomiting after a time is apt to be fecal, but may consist of a little mucus. Every sign of profound shock is observable, and upon examining the abdomen tympanites will most likely be found. However, sometimes the abdomen is relaxed and a tumor can easily be outlined in the right iliac fossa in a majority of cases. If the vomiting persists and temperature rises steadily death will result within twenty-four hours unless operative procedures are instituted in time. Occasionally we meet with subacute forms of intussusception, or even "chronic" cases; in the latter all symptoms are modified, but every case should be treated as urgent.

Treatment.—Anesthetize the child; make *gentle* massage and distend the intestine with two to three pints of warm salt solution. First, however, throw into the rectum four ounces of olive oil (kerosene has served), and then *gradually* introduce the salt water. If, as the bowel fills, regular circular pressure is made with the finger-tips, the chances of success are increased. A hypodermic injection of atropine, or hyoscine, and cactin will

relieve any spasm and render reduction easier. It these measures fail, pass a tube, draw off the fluid, and inflate with air. The disappearance of the tumor will mean success and will be followed by much rumbling and rattling with the passage of gas and feces. If no result is obtained, a laparotomy must be done. In irrigating or inflating be gentle—too much force may rupture the bowel and cause instant death.

DILATION OF COLON (HYPERTROPHY)

A disease seen occasionally among the children of the illy fed classes. It may accompany rachitis. After stool the enlargement may not be noticeable, but the children themselves are emaciated and subject to gastrointestinal derangements. Most of those afflicted die before puberty.

Cornin, hydrastin and strychnine in fairly full doses seem to have some effect, and the glycerophosphates decidedly aid nutrition. Physical exercise, proper food and a fairly tight supporting belt, with the drugs suggested, will be the basis of treatment, symptoms being met as they arise.

APPENDICITIS

Boys are more prone to be affected than girls. The old idea that foreign bodies, such as cherry stones and grape seeds, for instance, cause appendicitis no longer obtains but at the same time such a substance *may* set up appendicular inflammation. Concretions, worms, plugs of mucus, often form the nucleus of a mass which occludes the appendicular lumen and these are, in the eyes of the laity, "fruit pits" or seeds and credited with setting up the disease.

In children the catarrhal form may exist for some time before a diagnosis is made, the little patient complaining of vague pains and discomfort about the abdomen.

frequently locating the trouble as below the umbilicus. An acute attack, with sharp pain over McBurney's point, tenderness upon light pressure, some fever and vomiting, may lead to a suspicion of appendicitis, but more often it is unrecognized unless the condition persists or suppurative appendicitis sets up.

Where there is even only a possibility of an involved appendix it is well to watch the case closely and treat positively from the beginning. If upon drawing the finger-tips with deep pressure from the umbilicus downward and sideways to the iliac spine we can note rigidity of the muscles and elicit any signs of pain it is safe to diagnose appendicitis. Often in normal children the appendix may be felt under the fingertips rolling from under them, so to speak, but where inflammatory conditions have obtained for but even a few days it usually is impossible to locate it definitely. Indeed, it is not safe, where symptoms of inflammation are distinct, to make such pronounced pressure, as a pus-sac might easily be ruptured, or even a dilated appendix itself.

The discovery of a tumor in the right iliac fossa usually has but one meaning and when presenting with the other symptoms enumerated, calls for close attention—*usually* operation.

Ordinary attacks may pass off in a few days without treatment and with it almost always do so. On the other hand, a localized peritonitis may follow with suppuration. Here, though we may have all the evidences of peritoneal involvement and signs of pus-formation together with marked rigidity of the abdominal wall, the whole condition may after a week or ten days begin to ameliorate and recovery ensue. The pus is walled off by adhesions or the cavity empties into the bowel and a normal state of affairs appears to exist. But such is not the case and sooner or later a recurrence may cost the patient his life.

I do not believe in operating in every case of supposed or even actual appendicitis, but where the inflammatory process persists and increasing rigidity and tenderness together with a high temperature are observed, then the sooner the appendix is removed the less chance there is of extensive abscess-formation or gangrene and perforation. The doctor must use his own good sense, treating mild primary attacks promptly and properly but being ready, should need arise, to operate—and operate properly.

In making a diagnosis remember that in colic the pain does not persist (especially under treatment), there is not a localized tenderness, and fever is not present; children over five are more apt to have appendicitis than those younger; intussusception rarely is seen after the third year. An acute attack of indigestion with constipation may at first simulate an appendicitis, but treatment soon clears up the doubt. The extreme tenderness which some children complain of in pleurisy or beginning pneumonia also may prove deceptive, but the other clinical features and careful auscultation will prevent an error in diagnosis. It is well to teach the finger-tips to recognize the appendix and absolutely essential to familiarize oneself with the regional anatomy. The appendix is a "wandering body," being found in very widely different locations in different individuals. Thus it is possible for the pain to be referred to the *left* side or the back, the offending organ being abnormally situated.

Treatment.—Flush the colon with copious salt enemata as warm as can be given, and exhibit atropine, gr. 1-500, and strychnine arsenate, gr. 1-67. This will redden the skin and relieve spasm and local congestion. Now give an ounce of castor oil and in two hours give another. After that give hyoscyamine, gr. 1-250, strychnine, gr. 1-134, hydrastin, gr. 1-6, every three hours, and every two hours 2 drams of olive oil. Over the abdomen make

gentle circular massage with *light* pressure downward and to the left, using warm camphorated oil as a lubricant. Apply heat in the early stages—hot water-bag or compresses.

Pain is rarely troublesome when this treatment is carried out; if it is intense, a half tablet of hyoscine-morphine-cactin (Abbott) will promptly afford relief and relaxation.

The blandest of fluid diets must be ordered in every case and absolute rest in bed insured.

As soon as the vomiting is controlled and the temperature falls (as it usually will within twenty-four hours) the hyoscyamine may be given at six-hour intervals and the castor oil give place to two- to four-ounce draughts of saline laxative slightly sweetened and with a suggestion of lemon juice added. Occasionally a diarrhea sets in after the first twelve hours. This requires no attention unless it becomes profuse; then codeine, gr. 1-12, and zinc sulphocarbolate, grs. 5, may be given every two hours for three doses. Where fever at any stage is high, aconitine should be pushed "to effect," small doses at half-hourly or hourly intervals being most useful. An ordinary rise of temperature will yield to the first treatment suggested.

If there is a suspicion that pus is forming and operation is for any reason inadvisable or impossible at the time, calcium sulphide, gr. 1-6 every hour, and echinacea, gr. 1 every two hours, will be the imperative remedies. Nuclein, ten drops three times daily, is advisable in even the mildest case, while in the severe forms it is essential. As soon as the patient shows signs of recovery give podophyllin, gr. 1-12, and iridin, gr. 1-6, at seven and eight p. m. every night for a few days, and a saline laxative next morning. Continue light diet and give hydrastin, gr. 1-6, and juglandin, gr. 1-6, before food, and papayotin,

strychnine and capsicum (or piperin) after meals. Copper arsenite is of value.

In localized abscess-formation and in the gangrenous forms, operation must be done at once; in other varieties, unless the operation can be done during the first thirty-six hours, it is better to wait till the quiescent period.

PERITONITIS

Even the newborn may present peritoneal inflammation, infection occurring through the umbilicus. It may accompany or follow appendicitis, trauma, operation, extensive burns, etc. The acute infectious diseases may be the cause of more or less peritoneal congestion. Naturally, the process may be localized or general, the latter being a serious condition.

Infants so attacked usually die within three days. Older children, in whom the process is limited, should recover; if they survive the first week, prognosis usually is good.

The symptoms are distinctive: there is perhaps an initial convulsion, vomiting (not always), fever, and rigidity of the abdominal muscles; upon palpation exquisite tenderness is found to exist, and tympanites will be more or less marked. In most cases the onset is almost startlingly abrupt. The temperature soars rapidly up to as high as 105 degrees; the skin is dry; the face is drawn and indicative of extreme distress; urine may be so scant as to amount to but an ounce or two in the day; the bowel is inactive; the pulse is small and frequent; the tongue is bright-red and covered with a thick white or grayish deposit on the dorsum and down the center. In a few cases I have seen the entire tongue extremely red, glazed and peculiarly pointed.

It is always necessary to find out where the infection started. In many cases a vulvovaginitis (gonorrhea)

has been the origin; occasionally the retention of scybalæ sets up inflammation; again, the rupture of an abscess or the discharges from a diphtheritic or simple enteric ulcer are responsible; perityphilitis is the most common cause of all. Not at all infrequently we are unable to find any rational reason for the disorder.

Treatment.—Hyoscyamine, gr. 1-500, and aconitine, gr. 1-750 to 1-500, alternately every hour for four doses, then every two hours for the rest of the first twelve hours. Next, calomel, gr. 1-6, and podophyllotoxin, gr. 1-12, half-hourly till six doses have been taken, then a full saline laxative draught at the end of three hours. After stools have been passed flush the intestine gently with cool boric acid solution or dissolve one menthol compound tablet in two pints of water, add one ounce of glycerin. Inject slowly, allowing the fluid to pass, and then close the bowel. Maintain asepsis and rest by exhibiting codeine, gr. 1-12, and the compound sulphocarbolates (sodium, zinc and calcium), 2 to 5 grains, every four hours. By this time the use of hyoscyamine and aconitine will usually be very moderate; the small dose being used (alternately) every three hours. Cold compresses wrung out of a saturated solution of epsom salt (one ounce to the pint), with 10 drops of guaiacol dissolved in alcohol added to each pint, are applied frequently over the bowels.

In some cases, where the patient is seen late, we must use heat, but where heat is demanded operation is also imperatively called for. After the first day, or thirty-six hours, we should find all the symptoms abating. Give only small quantities of bland fluid food—in fact nothing but slightly acidulated barley or albumen water should be allowed the first day. Catheterize if there is any need for emptying the bladder, using extreme care and observing strict asepsis. The "calmative" combination

in solution will prove even more efficient and easy of exhibition than hyoscyamine.

If perforation is feared, operate; if pus-formation is suspected, add half-hourly or hourly doses of calcium sulphide, gr. 1-6, and at least six times daily give 1 grain of echinacea. Inunctions of colloidal silver ointment (ung't. Credé) will aid in controlling conditions, while the hypodermic use of nuclein will practically maintain normal resistance to invading bacteria.

It should be remembered that different symptoms (caused by varying pathological processes) call for different remedies; hence, while no patient would receive all the medicines recommended at any one time, he might require each and every one at some period before recovery. The doctor alone can decide which drug to give, when to give it, and how long to maintain its administration.

Chronic Peritonitis, when non-tubercular, may follow lithemia or the exanthemas and is marked by gradually increasing ascites, the general health failing usually slowly but steadily. Tapping (paracentesis abdominis) may be required, but proper feeding, high antiseptic enemata, and the administration of hydrastin, gr. 1-12; helenin, gr. 1-12; eupatorin, gr. 1-12; leptandrin, gr. 1-12, morning and night, or, in children over ten years, three times a day before meals usually will prove remedial. A digestant may be given after food with advantage and nutrition improved by the use of the prepared blood-foods. A flannel belt should be worn and the abdomen gently massaged daily. Do not give opiates or alcohol in any form. Calendula and a soluble salt of bismuth prove of value here.

In *tubercular* cases regular antitubercular treatment must be instituted, the diarrhea, which is the most troublesome feature, being met with the regular remedies. Here intense pain may necessitate the use of codeine.

CHAPTER VI

INTESTINAL PARASITES

TAPEWORM

Tænia solium (pork-worm), tænia saginata (beef-worm), and tænia cucumerina, or eliptica, from the dog and cat), are the three varieties we usually have to deal with, tænia saginata being by far the most common. I am not able here to go into a life-history of the various parasites; suffice it to say, the embryo gains access to the patient's intestine through the ingestion of "measly" beef or pork in a half-cooked or uncooked state. Sausages and the various "dried" and "chipped" beefs on the market are a source of danger. Raw meat should never be eaten by children. Tænia cucumerina becomes a resident through the child placing dirty fingers or articles in his mouth: the embryos are spread broadcast from the mature segments evacuated by dog or cat and naturally get upon vegetables, fruit, etc., and even upon the child's hands when playing in the dirt. A cat or dog with tape-worm should be promptly treated or, together with any parasite passed, destroyed.

Tænia saginata (beef-worm), may reach a length of twenty feet or more. The head is not armed with hook-lets but has four "suckers;" the segments are very broad and short; toward the head the worm becomes very thin, the head itself being no larger than the "E"-string of a violin.

Tænia solium (pork-worm) is not as long as the former and the head has a circle of hooklets; the ripe segments (which are bisexual in both worms) look, when at rest

almost square. They elongate and contract upon being voided.

Tænia eliptica is not very often seen. It is only about a foot long, usually less; the mature segments are long, a chain of them resembling linked sausages.

Tænia nana, flava, punctata, and bothriocephalus latus are rare, and they yield to the same treatment as those described. Bothriocephalus latus uses the fish as his intermediary host.

The symptoms of tapeworm may be almost *nil* or varied and troublesome. The child eats inordinately and craves unnatural foods, has a bad breath, coated tongue and restless sleep. It picks its nose, complains of a crawly feeling in the abdomen and (sometimes) becomes anemic. Occasionally diarrhea is a feature. The segments are sure to present in the stools sooner or later, and suspected children should void in an open vessel.

Treatment.—When segments are found, empty the bowel with any reliable laxative, follow with a saline, and give the patient a light, last, meal at 5 in the evening. The next morning early give one-half to one ounce of a preparation of extract of male-fern root with chloroform in castor oil ("tapeworm remover," Abbott). This should be exhibited in one way only:

Warm the bottle by standing it in a vessel of *hot* water Warm two cups and pour into each one two ounces of milk just cool enough to be swallowed easily. On top of the milk in one cup pour the dose decided upon, and instructing the child to hold its nose with one hand, give the cup into the other. The contents are swallowed at a gulp and (without removing the fingers from the nose or drawing breath) the patient takes the cup containing the plain hot milk, washes out his mouth with a portion (voiding it) and swallowing the rest. In this way the medicine can be taken without even tasting it.

Now keep the child on his feet, and if the worm is not voided within two hours, repeat the dose. Have ready a pail filled with water and let the stools be voided into this, allowing the worm to "float up" on top. If it remains pendant from the anus, wind it gently upon a stick or some twisted paper, making *no traction* to speak of. In this way "head and all" will be obtained. If the head remains, more trouble will follow. This method has given results in fully nine hundred and ninety cases out of a thousand. In half the others "the worm wasn't there."

If desired, however, the worm may be evicted by giving 20 drops of oleoresin of male fern at intervals of two hours, three doses usually sufficing. Two hours after the last dose give castor oil and await results. Feed on milk only for twenty-four hours.

Pelletierine tannate, 5 to 15 grains (children usually take 10 grains) will sometimes prove effective. Shelled pumpkin seeds, ground up and given in emulsion or with almond paste are an old-fashioned but not very reliable remedy.

ASCARIDES (ROUNDWORM)

Ascaris lumbricoides is likely to infest most children at some time. It is also apt to produce crossness, anorexia or unnatural appetite, nose-picking, and various gastrointestinal disturbances. Colic is due to its presence, and a mass of worms may occlude the gut. Fever is not at all uncommon, and not infrequently convulsions or a species of chorea may accompany their presence.

Treatment is simple and effective. Give santonin and calomel, aa. gr. 1-6, hourly for four doses from three p. m. and a full grain at bedtime. Next morning give castor oil or a saline laxative (the latter is best), and "catch the worm early." Chelonin, gr. 1-6; santonin, gr. 1-10, and podophyllin, gr. 1-33, is another good formula. (Barron.)

Three such tablets are given at night and one every two hours the next day, the child being allowed a light diet only. After worms have been voided, flush the bowel with a saline laxative draught, and give a copious enema of salt water. The dosage given is for children from 8 to 12 years. Hydrastin, quassin and the triple arsenates should be given for a time to restore systemic and local intestinal "tone."

OXYURIS VERMICULARIS (SEAT-WORM)

A troublesome parasite everyone is familiar with and which often makes children almost desperate. The female worm descends from the rectum to the anus and nates to lay her eggs and often wriggles into the vagina of a girl. Serious inflammation (and masturbation) may result. Children scratch the anus, often till it bleeds, and reinfect themselves by conveying the eggs to the mouth. Mucus usually is abundant, a mass of it (called the "nest") being sometimes voided with a bunch of the parasites. This worm may set up convulsions.

Treatment.—Infuse a handful of quassia chips in a quart of water, strain and flush the bowel with fluid. Then with a pile-pipe, inject into the rectum a dram of carbenzol ointment, one part, simple cerate (or vaseline), two parts. Give a few doses of calomel and santonin, aa. gr. 1-6 every third night, and quassin, gr. 1-6, before each meal. Sulphur laxative, two to three granules, after food. Be sure to pay attention to the vagina when a girl is affected. Garlic, one to two cloves, eaten daily with bread and butter will positively destroy the pinworm. Lacking quassia, wash out the bowel with a weak, warm vinegar and water enema.

PROLAPSE OF THE RECTUM

This presents in varying degrees, usually in children of the strumous type or debilitated diarrhea patients

Sometimes only the extreme lower margin of the gut protrudes; this will return of itself if light pressure is made and the hips are elevated. But sometimes the entire lower bowel protrudes after each stool, and unless care is taken inflammation and ulceration may set up and serious results ensue.

Wash the protruded mass gently and then oil it thoroughly; if swollen, apply cloths wrung out of a cold solution of witchhazel (hamamelis). Then, while making pressure on the sides of the tumor with the fingers of each hand (applied to opposite sides), push upward and inward with the thumbs, or have an assistant pull upon the nates and making a cone of the fingers gradually work the bowel back. Great tenderness and patience are essential. The bowel is apt to come down again in an instant unless pressure is made, so keep the fingers on the anus until you can replace it with a cone-pad of gauze. Over this pad place a T-bandage and have the child placed in bed with the hips elevated. Have the child defecate while on its back. Inject into the rectum 5 grains of tannin dissolved in half an ounce of water, or use boroglyceride of tannin, half a dram, in place of the powder. At night insert a suppository containing gr. 1-12 to 1-8 of extract of hyoscyamus. Innunctions of belladonna ointment may be used. Internally give hydrastin, gr. 1-12; brucine, gr. 1-134; collinsonin, gr. 1-6, every four hours. I have found the aqueous preparation of calendula, 1 part; thuja 1 part; water, four parts, the most efficient of all local remedies. Inject half an ounce of the mixture and place the cone-pad and bandage. Local (hypodermatic) injections of strychnine are recommended in stubborn cases, or the bowel may be stroked in four to six places with the cautery. I have never had to resort to this and can not believe it is necessary once in a thousand cases The methods given will cure.

PRURITUS AND FISSURE OF ANUS

Get rid of worms, exclude vulvovaginitis, rectal polypi and fissure; the latter are more common than supposed. Wash the parts well with tar or carbenzol soap and dry thoroughly, then apply carbenzol ointment on a piece of gauze. Where grease is undesirable, use dolomol-ichthyol. In intractable cases apply citrine ointment and resin cerate, 1—3 parts, twice a day. Always wash out the lower bowel with some simple alkaline astringent, and give every other night iridin, gr. 1-6, and juglandin, gr. 1-6, hourly for three doses; a saline laxative next morning. Watch the urine and if insufficient elimination is the cause, give the indicated remedies "to effect." Campho-phenol and menthol ointment are palliative preparations.

It is often desirable to dilate the sphincter ani and if a fissure exist or denuded areas are detected cleanse the part with hydrogen peroxide, wash well with a saline solution and dry. Now, with a camelshair pencil or probe touch the fissure or raw areas with 95-percent carbolic acid; if excoriations are numerous do not attempt to treat all at once. Then—allowing ten seconds or so to elapse—go over the same spot with alcohol, dry with cotton and apply a little carbenzol ointment or mild desiccant powder. In well-defined fissure, after applying the acid till the surface is white, with a sharp bistoury cut through the floor—go *through* it; the bleeding is inconsiderable, pain *nil* and relief immediate. Cure follows. *Always dilate* the sphincter if fissure exist. A 1-percent solution of silver nitrate may also be used every other day with excellent results in the above cases.

These patients require saline cathartics always, while æsculin and hamamelin, gr. 1-6, three or four times a day often will prove extremely beneficial. Hyoscyamine wil relieve the congestion and quiet peripheral nerve-irritation

CHAPTER VII

DISEASES OF THE LIVER

JAUNDICE (ICTERUS)

Icterus neonatorum has already been dealt with. Jaundice in later childhood may be due to any one of many causes. The ducts may be occluded wholly or partly (concretion, roundworm, pressure, inflammation), when we shall have *obstructive* jaundice, or the *toxic* variety may present—malaria. Weil's disease, the infectious diseases, etc. It is essential, therefore, that we do not treat the jaundice, but its *cause*. However, in childhood we may with safety exclude several conditions: gallstones are very rare (fatal when found in infancy), cirrhosis almost as infrequent, and abscesses most uncommon.

In nine out of ten cases where we find icterus it may be attributed to catarrhal hepatitis—icterus catarrhalis.

The symptoms are practically the same as in the adult. The child is apathetic, has some elevation of temperature and complains of nausea or even vomits. The head aches and the abdomen is more or less tympanitic. Occasionally the onset is sudden and the fever marked early, in the great majority of cases however it comes on gradually and the symptoms which do present are supposed to be due to some other cause. The skin begins to assume an icteric hue late. Upon percussion the liver will be found to be enlarged and dulness may be noted two fingers' breadth or more below the costal margin.

At this time foul breath generally is a marked feature and the stools will either be hard and clay-colored or (frequently) fluid and fetid; in the latter case they resemble

thin putty in appearance. Constipation and diarrhea may alternate. The urine is scanty and high-colored; the pulse slow and usually full.

The prognosis is good in nearly all cases, cure following ten to fourteen days' positive treatment.

Treatment.—Put the child to bed and on a strict diet; no meat, fat, milk or eggs must be allowed till the stools begin to assume a normal color. Light gruels, zwieback, barley, rice, tapioca, sago, apple sauce, prunes, figs (not too much sweetened) and other fruits, together with lettuce salad, water-cress, asparagus, turnip tops and similar green food may be allowed in moderate quantities. Vary the diet, always. Have the child drink plenty of water between meals and a glass of hot water with orange or lemon juice in it the first thing in the morning. When the stools begin to assume normal conditions allow small quantities of meat—chicken, mutton, beef, but no veal or pork—and each day permit *one* egg.

Medicinally start treatment with six half-grain doses of blue mass and soda, given at hourly intervals, adding to every other dose podophyllotoxin, gr. 1-12, and bilein gr. 1-12. I prefer podophyllotoxin to podophyllin (neutral) in pediatric work because of its more positive and even chologog action and freedom from irritant properties. The addition of bilein—the active principle of bile—enables us to restore normal intestinal conditions almost at once; moreover, the presence of bile is, obviously, desirable. Six hours after the last dose a full teaspoonful of effervescent magnesium sulphate should be given and the skin well sponged with a solution of the same salt. This sponging should be repeated daily. One ounce of epsom salt to the quart of water is the proportion.

Now, three times daily before food, exhibit leptandrin, gr. 1-6, and after eating, papayotin, gr. 1-3, and chionanthin, gr. 1-3 to gr. 1. If the icterus is very marked, cheli-

donin, gr. 1-3 to 2-3, or five to ten drops of specific tincture of chelidonium majus should replace the leptandrin for three days. As the skin assumes its normal color and the stools become satisfactory the chionanthin may be dropped and rhein, gr. 1-6, and juglandin, gr. 1-6, substituted.

The use of acids is highly recommended by some writers, but as a matter of fact, the conditions present in each case must determine this matter. Ten drops of diluted hydrochloric acid in a tumblerful of water, if given with each meal, will prove highly beneficial in many instances, but if there is gastric irritability with vomiting sodium bicarbonate and a few doses of rhein will prove preferable. I have not found acids as effective here as in adult practice. Senna, aloes and the other awful concoctions recommended by old-school writers cannot possibly accomplish anything not easily obtainable with the remedies already suggested.

Before discharging the patient order juglandin, gr. 1-6, and hydrastin, gr. 1-6 t. i. d., before meals, and a saline laxative draught every third morning. If for any reason the primary mercurial does not prove sufficient repeat the dosage upon the third night; in rare instances half the amount may be indicated again at the end of the week.

HEPATITIS

In treating the infectious diseases we are apt to note a certain proportion of patients presenting more or less enlargement of the liver. This usually means that the liver is overwhelmed with toxins and is, so to speak, working under double pressure in order to dispose of the body-waste. Here the regular "clean-up" measures will produce prompt reduction of the engorgement, and I have more than once been able to palpate the liver two fingers' breadth below the ribs one day and found it occupying its proper position two days later. We ought to remember, however,

that the liver may *produce* toxic material from having to deal with abnormal substances. In fact autotoxemia increases in severity almost automatically.

Localized congestion of the intestine (or some other cause) may lead to the retention of fermenting, bacteria-laden material. A chill followed by rise of temperature evidences the absorption of toxins and immediately the liver is subjected to more or less intense strain; in the attempt to deal with abnormal substances the chemistry of the organ itself becomes deranged and as a result the blood each day becomes more and more toxic and every secretion of the body—every organ—suffers to a greater or less degree. To treat the congested liver or irritated kidney or abnormal blood condition is like trying to extinguish a fire in an oil refinery by tearing off the blazing shingles on the roof instead of removing the oil and extinguishing the flames on the ground floor.

Treatment.—In all hepatic congestions, save those due to tuberculosis or syphilis, the primary step is to restore intestinal activity and cleanliness. This alone often will suffice, but should it not do so we must try to relieve the localized congestion by equalizing circulation and then slowly but surely reestablish normal metabolic processes throughout the body. A few doses of calomel and podophyllin, a saline laxative draught or two and the exhibition of a non-irritating intestinal antiseptic—and most of our intestinal and hepatic troubles are controlled.

It might be well to point out here that while in eight out of ten cases calomel, calomel and soda, calomel and iridin, or calomel and podophyllin, followed by a saline laxative, prove *the* ideal initial cholagog or "clean up," the other two remaining cases will respond infinitely better to castor oil—or, indeed, to that agent only. Sometimes we may give the first-named medication to the limit of tolerance without getting abatement of symptoms. Free stools we shall

secure, but the fever persists and there is more or less tenderness over the abdomen in the ileac region: now a full dose of castor oil will bring away (next morning) a fetid, pultaceous stool, and the temperature will drop instantly. In many cases of combined hepatic and intestinal derangement, therefore, it is well to give a dose of castor oil after the calomel and podophyllin.

Hypertrophic cirrhosis is sometimes encountered; icterus (see above), epistaxis and anorexia will be noted; upon palpation a well-defined splenic tumor and some ascites will be discovered in most cases. The prognosis is bad, always, but careful feeding and the exhibition of boldine, bilein, and the arsenates with hydrastin may check the course of the disease. In *syphilitic hepatitis* specific treatment must be instituted at once and persisted in for months and years. *Tubercular hepatitis* calls for the regular antitubercular treatment and calx iodata: nuclein is of value and euonynim alternated with iridin gives results. In all *chronic* hepatic engorgements iridin is specially indicated, with chelidonin or chionanthin. In *malarial hepatitis* euonymin with the arsenates and quinine hydroferrocyanide will prove most efficient.

ATROPHY OF THE LIVER

Not common in children under five; when it does affect the infant it is septic, always. Treatment is absolutely useless as the disease is rapidly fatal.

ABSCESS OF THE LIVER

Another rare condition. Occasionally the newborn develops hepatic abscess (sepsis) but as a rule the condition follows typhoid or suppuration of the mesenteric glands. The roundworm may invade the duct and set up an abscess, or traumatism may be the cause. In exceptional cases infection takes place through the inferior mesenteric vein and an abscess may follow perityphlitis.

The symptoms are at first obscure. Chills, fever, more or less jaundice, tenderness over the liver and gastrointestinal disturbances may present together; examination will reveal some enlargement of the liver and fluctuation may be discovered. The location of the abscess of course means much. If it can be located it must be aspirated and drained thoroughly, if the site is uncertain incision should be made and the pus evacuated. It is not good practice to leave the abscess to rupture, trusting that it may drain off through the bowel. The patient should be placed upon full doses of nuclein (gtt. 10, t. i. d.) with calcium sulphide, gr. 1-6, every two hours and echinacea, gr. 1, every three hours. The glycerophosphates will also prove of service or the triple arsenates may be given for their tonic alterative effect—two granules after meals. The food should be highly nutritious and easily assimilated. Unguentum Credé, one dram, may be administered by inunction night and morning.

CHOLELITHIASIS (GALLSTONES)

I have never seen biliary calculi in a child under fourteen but several cases have been reported—one a child of eight years old. The textbooks mention cases in infancy. The treatment is the same as for adults. The two positively efficacious remedies are sodium succinate and boldine. Of the sodium succinate grs. 2-5 and of boldine gr. 1-67 must be exhibited before meals for several months, and after food papayotin, gr. 1-3, and chionanthin, gr. 2-3, should be taken.

If there is marked occlusion of the duct gentle vibration should be given daily and olive oil, one dram, to which 1-3 grain of papayotin has been added, may be taken. This is prepared by placing the vial in a container of water at 100° F., until partial digestion occurs. I prefer to give this midway between meals. Inunctions of olive

oil often are grateful to the patient and cannot well do harm; indeed anything that will cause relaxation is desirable. High enemata of epsom-salt solution—2 drams of the salt to a quart of water—are also of benefit. Never inject more than one quart unless the patient is past fourteen years of age. Have him assume the knee-chest posture and insert the tube as far as it will go toward the hepatic flexure. I cannot speak too highly of properly applied vibration in these cases, especially where adhesions have formed.

In the acute stage, where colic is distressing, relief can be extended at once by the exhibition of hyoscine-morphine-cactin, one half-strength tablet hypodermically; if the patient is under twelve, half that dose. Failing this, give atropine, gr. 1-500, and strychnine nitrate, gr. 1-67, or hyoscyamine, gr. 1-250, and strychnine arsenate, gr. 1-67. Repeat in fifteen minutes, and every hour give dioscorein, gr. 2-3, with a little hot water. Apply over the gall-bladder *hot* compresses, having first rubbed the area well with guaiacol.

Do not diagnose "gallstones" too readily: catarrh of the duct is not uncommon, whereas occlusion of the duct by biliary concretions is. However, should a concretion enter the duct, operation is rarely needed as it will either drop back into the gall-bladder or pass through the duct in the great majority of cases.

The measures outlined above control the pain positively, and sodium succinate, boldine and chionanthin prevent the further formation of gallstones and cause the solution of those which do exist.

FATTY LIVER

A troublesome and not rare condition which is, however, seldom recognized. It has been found in marasmic and eczematous children and it is more than possible that

some rebellious eczemas are due to this abnormality of the liver. In 345 consecutive autopsies the liver was found by Wollman (Babies Hospital, New York) to be fatty in 201 cases. It has been definitely settled that wasting and fatty degeneration do not accompany each other; well-nourished children being most likely to reveal fatty liver at autopsy.

The symptoms are obscure, and ascites and icterus do not present, though the stools are likely to be more or less acholic. Treatment naturally must be symptomatic; in nine cases out of ten we shall have to treat some more apparent pathological condition, but where fatty degeneration is suspected we shall find small doses of boldine and potassium iodide of service. Berberine has given good results in one or two cases.

CHAPTER VIII

DISEASES OF THE PERITONEUM

ACUTE PERITONITIS

From the moment of birth to the end of life peritonitis is a possibility.

In the newly born it is far from an uncommon condition but unhappily the attendant usually diagnoses "colic." From the first week to the fifth year there is a period of freedom from danger, few children being affected until after five years old.

Direct infection through the umbilical vessels causes the *early* cases and unfortunately most of the little patients die within three days. It is almost impossible to recognize the conditions existing, and even were we able to do so the resistance is too slight to enable us to make a satisfactory fight.

However, we may give first of all an injection of olive oil (one ounce, bearing three drops of oil of turpentine, pure), following this with a pint of warm water and then rub over the abdomen five drops of guaiacol, and apply cold compresses. Gelseminin—one granule (gr. 1-250) dissolved in sixty drops of water, five to ten drops every hour or two—will prove efficacious if given after a fairly full dose of hyoscyamine. Give the little one plenty of cool water to drink, using a dropper. Give enemas every six hours (cool normal saline) and barley water and beef juice as nutrient. So a few cases may be saved. (See also "Diseases of New-Born.")

In older children we may have primary or secondary peritonitis. The first may follow a fall or blow, exposure

to cold or operative procedures. Secondary peritonitis may follow appendicitis (most common cause), abscess of liver, etc., intestinal obstruction, typhoid (rarely), pleurisy, gastric ulcer or infection of the female genital organs. A perinephritis may cause acute peritonitis, it may also present suddenly in Pott's disease. The acute infections may have peritonitis as a complication, especially scarlet-fever and pneumonia.

Naturally, different bacteria are to be found in different cases. The streptococcus is usually the offending germ in primary cases, but the pneumococcus and bacterium coli commune are often responsible—the latter wherever intestinal perforation has occurred. The changes which take place are similar to those occurring in inflammations of other serous membranes.

Symptoms.—These are easily recognized. The onset is extremely abrupt and the vomiting dynamic. Intense pain is complained of and the temperature soars rapidly up to 103°—105° F. After a few hours, vomiting usually ceases; in some instances, however, it persists for days. The vomited material is generally a greenish serum. The abdomen is tympanitic and uniformly enlarged, presenting to the finger a peculiar tense, drum-like feel. Irregularity of swelling is rare and usually accompanies a paretic condition of the underlying intestine. Rigidity of the muscles is marked and tenderness general; later there may be sufficient fluid present to cause fluctuation? The pulse is small, rapid and easily compressed; the facies anxious and the mouth drawn—the typical Hippocratic countenance. The urine is often suppressed; always scanty and highly colored and the bowel may be obstinately constipated. In a few instances (intestinal disease) diarrhea is a feature. The frequent discharge of serum is not uncommon. In very severe cases singultus, cold extremities and thread-like pulse usher in collapse.

Any physician who has seen a case of acute peritonitis knows that there is no trouble whatever in reaching the decision that the patient is *very* sick. Convulsions may set in early. The course of the disease is short and little time is given in which to work. What is to be done must be done early and properly. The young patient may die in three days, the older child succumbs to the disease in a week: if that time is passed recovery may be hoped for.

The *prognosis* must always be guarded: in localized peritonitis the outlook is better than in general inflammation, and better in the fibrinous than in the purulent form. Continued temperature, hectic fever and sweats, with evidences of tumor, may be taken to mean the formation of a peritoneal abscess. This will probably call for surgical intervention.

Treatment.—We can today do infinitely more than was possible ten years ago, and if we are called early, should save life in three out of five cases.

The idea that we should tie up the bowel and give opium is monstrous—a piece of malpractice born of ignorance and perpetuated by crass stupidity and smug self-complaisancy. If congestion exist, why not relieve it? If we *can* produce a derivative effect upon the inflamed peritoneal tissues, why not do so? If we *can* reduce infection—deplete the ranks of bacteria and limit the amount of toxins produced by them—is it not our duty to do so whether the peritoneum or any other serous membrane be involved?

Rational therapeutics wins here as elsewhere. The doctor worthy the name merely satisfies himself that he has certain conditions to deal with and then proceeds to do such things as experience teaches are *essential*. Moreover, he does nothing which he does not thoroughly understand, believing that it is safer to hold his hand than meddle with matters beyond his comprehension.

As a first step, the engorged vessels are relieved and the blood brought to the surface by effective doses of hyoscyamine, gr. 1-500 every hour or two till the skin is red and the mouth somewhat dry. Codeine, gr. 1-24 to gr. 1-12, may be added if pain is severe. The bowel is flushed with a cool solution of epsom salt (two drams to the quart) and one teaspoonful of effervescent magnesium sulphate is exhibited in a glass of water every two hours for three doses; thereafter every three hours. (The effervescence should be allowed to subside before the draught is given.) The injections are repeated every four to six hours. Heat is applied to the feet and legs and cold compresses or the ice coil to the abdomen. Sometimes heat is preferred by the patient; cold, however, is the best therapeutic agent early.

In twelve teaspoonfuls of water dissolve aconitine, digitalin and veratrine, six granules each, and give thirty drops of this solution every two hours for the first twelve hours, then every three hours. Four times daily give bryonin, gr. 1-67; eupurpurin, gr. 1-6; pilocarpine, gr. 1-67, and watch the symptoms subside. If sepsis is evident, stop the latter and substitute nuclein, ten drops every four hours, and echinacea, gr. 1, and baptisin, gr. 1-3, every three hours.

Wash out the stomach before feeding and give only small quantities of peptonized milk, albumen water, clam bouillon, the prepared blood-foods and kumiss. Inunctions of colloidal-silver ointment are decidedly beneficial. Laparotomy may be necessary—be prepared, always.

Obstinate vomiting will yield, as a rule, to ice sucked slowly, but if it does not, give cocaine, gr. 1-24, fifteen minutes prior to food, always adding cactin, gr. 1-67, to prevent cardiac depression. However the stomach lavage has always put an end to vomiting in all the cases I have treated.

CHRONIC PERITONITIS

This condition may follow the acute form or may be "chronic" from the first. Adhesions have formed and new connective tissue continually is produced. Serum is exuded and gradually various pockets become filled therewith, causing distension. It must not be forgotten that peritoneal abscesses may run a distinctly chronic course and we may even have the two conditions combined. However, in the typical chronic peritonitis with ascites there may never have been an acute stage; the disorder simply comes on and the swelling of the abdomen, together with failure of the child's health, may be the first symptoms which attract attention.

It has long been supposed that a tubercular taint existed in every instance, but there is today no question that while tubercular peritonitis is more common than any other variety there is a distinctly non-tubercular form. In fifteen years' active practice I have seen four distinct cases where tuberculosis could not be even suspected, but these children were illy nourished and from immature and anemic parents.

The prognosis is fairly good, the fluids usually being absorbed; sometimes, however, it is necessary to tap once or twice before absorption begins.

Symptoms are few, and not distinctive in the early stage. Indigestion, with alternate diarrhea and constipation, with some tenderness of the abdomen will be the main features. If the abdomen has begun to fill and the umbilicus pouts, diagnosis is easy. The superficial veins are prominent and fluctuation is easily obtained. Anemia is quite marked and there is loss of flesh. The temperature as a rule rises toward evening. If we can exclude tuberculosis and the patient does not suffer from some intercurrent disease the outlook is favorable, but it is well to be guarded in making a prognosis

Treatment.—Promptly place the patient upon a dry, nutritious diet, and every third day give a few small doses of elaterin, gr. 1-67 every hour for four doses, following next morning with a saline laxative draught. Hydrastin, gr. 1-6, xanthoxylin, gr. 1-6, and eupurpurin, gr. 1-6, may be exhibited together three times daily between meals, while after food the sulphur laxative granule (two to three) together with one of the papayotin compound will be useful. Morning and night exhibit nuclein, eight to ten drops. Every month give for one week in place of the hydrastin, xanthoxylin, etc., the following: Cactin, gr. 1-67; collinsonin, gr. 1-6; arbutin, gr. 1-3. This will improve circulation and increase the amount of urine excreted, at the same time improving the tone of the affected tissues generally. Salt sponge-baths, gentle massage and the wearing of a flannel band will be useful measures. Vibration should be faithfully tried.

If the dropsical fluid is present in embarrassing quantity, draw off a large part, and if it regathers, repeat the procedure. Always make your puncture in the median line and through a wide bandage, the ends of which are split and crossed behind so that increasing traction may be made as the abdominal cavity empties.

It is desirable to test in nearly every case the effect of calx iodata; it will usually be found to exert a prompt and beneficial action, causing the disappearance of fluid and improving the general health. It is well to keep the patient in bed for some time but fresh air is a necessity and deep breathing and exercise of the abdominal muscles imperative. If, despite treatment and aspiration, the abdomen refills, a laparotomy should be done and adhesions broken up.

TUBERCULAR PERITONITIS

A proper study of this interesting and important disease is impossible in a work of this size. Holt and Koplik should

be consulted and Sahli or Musser also studied thoroughly so that the various forms of the disease and their various stages may be identified. The peritoneum is involved in a very large proportion of tubercular patients, Ashby finding no less than 36 percent so affected in 105 autopsies—these were all children under fourteen. The disease may be acute or chronic—subacute general miliary tuberculosis being the most common variety encountered in pediatric practice. There are here no abdominal symptoms, but the peritoneum is sparsely studded with tubercles and the general symptoms of tuberculosis are well defined.

Again, we meet miliary tuberculosis of the peritoneum with ascites. Here the tubercles are thicker and the child wastes rapidly. The abdominal distension may be extreme, congestion is wide-spread, and while but a small amount of fibrin is formed the serum is abundant. Occasionally it is sacculated but more often fills the peritoneal cavity as a whole. Upon puncture a dull olive-green fluid is obtained, rarely it is clear or sanguinous. The course is subacute and the disease, untreated, ends fatally in three or four months. There is constipation, debility, moderate fever and loss of weight. Tenderness is not apparent and quite often the disease escapes attention until ascites set in. Rarely absorption occurs and we then have a fibrous form of the disorder or perchance the ulcerative type may follow.

The Fibrous Form.—As in the fibroid form of pulmonary tuberculosis, we here have to deal with the products of a tubercular inflammation which have undergone a beneficent transformation. Nature has made an effort to repair local damage. Caseation never occurs in these cases and very rarely is there any collection of serum. In a few "mixed" cases ascites exists. The bowels, however, are tied down and unnatural walls exist throughout the abdominal cavity. In some cases the adhesions are so extensive

as to knit together all the coils of the intestine, and, again, this mass may be firmly adherent to the abdominal wall. As a result there is great irregularity in the abdominal outline, especially if ascites exist.

This is perhaps the most treacherous form of tuberculosis, the only symptoms observable being a colicky pain and indigestion with perhaps obstinate constipation or recurrent diarrhea. Some fever may exist and not rarely the abdomen will fill up and as quickly regain a normal appearance. Edema of the feet and ankles may call attention to the urine which will be found albuminous. The disease runs a slow but steady course, exacerbations becoming more frequent after some months. After a year or so the patient succumbs to exhaustion or an acute peritonitis.

The Ulcerative Form.—May follow either of the above or appear primarily. The prognosis is extremely bad and the symptoms well marked from the very beginning. In every case tubercular lesions are found elsewhere, usually in the lungs.

Unfortunately this is one of the most common varieties met with in children, and while it may be localized, is too often general.

The *symptoms* are well marked, partly due to the peritoneal inflammation and partly to the effect upon the system of the tubercular toxins. Fever runs from 101° to 103°F., and occasionally it assumes a hectic type. Loose bowel movements, often streaked with blood or mucopus, are the rule, and emaciation progresses rapidly. Drenching sweats are common and from the first prostration is profound. The abdomen is enlarged, but not enormously so and on percussion, irregular areas of dulness and resonance can be discovered. Fluid is not to be detected as a rule though it exists in nearly every case and may be obtained by aspiration—do not try it, however. Later hard nodular masses can be outlined or a smooth tumor may be felt in the epi-

gastric region; this consists of hardened omentum. Quite often the pulmonary symptoms are more severe than the abdominal and some signs of lung involvement always exist.

The disorder runs a steady course of from two to six months, the end coming from meningeal involvement, inanition or perforation and sepsis. These cases may be regarded as hopeless and all we can do is to make the patient as nearly comfortable as possible. Here the use of opiates is not only allowable but absolutely called for.

Treatment.—A fair proportion of patients afflicted with the fibrous and simple ascitic forms recover, or at least reach maturity, and we should put forth every effort to save our patients.

The basic treatment is, of course, that for tuberculosis generally: life out of doors, proper feeding and elimination.

Operation must always be considered; many patients who progress just so far and then "stick" being markedly benefited by proper surgical procedures. However, proper preparation for operation means almost as much as the operation itself. Send the child to an equable climate and have it live either in a tent or in a room always open to the fresh air. The body, of course, must be well protected, always.

Give highly nutritious and easily assimilated food, such as eggs, meat juices, somatose, sanguiferrin, whole wheat, jelly, cream, junket, scraped beef, clam bouillon, etc., etc. "A little often" is the rule. Nuclein is of unequalled value —ten drops three times daily. It may also be given with the arsenates of iron, quinine and strychnine (triple arsenates), one tablet after food. A positively effective formula is strychnine arsenate, gr. 1-67; iodoform, gr. 1-6; calcium lactophosphate, gr. 1-6; nuclein solution, 3 drops. This is known to alkalometrists as "antituberculosis" tablet, and in doses of four to eight daily arrests vital decay, de-

stroys tubercular virus and affords the needed material for cell-repair. The large dose of nuclein should also always be used, but when this combination is being given the triple arsenates should be dropped. I give one or two of the "antituberculosis" tablets half an hour prior to food and at the same time drop the nuclein tablet under the tongue. Midway between meals I give for one week guaiacol, either with glycerin and hot water or in Russell's emulsion of mixed fats; the latter gives me better results than codliver oil. Always exhibit this in half a glass of *hot* water. Guaiacol carbonate (duotal), 4 to 8 grains, may be given to children who will not take guaiacol. After a week I drop this and exhibit xanthoxylin, gr. 1-3; helenin, gr. 1-6; iron iodide, gr. 1-12, in its place. After each meal I give papayotin, gr. 2-3, and bilein, gr. 1-12. "Emulsion cloftlin" will often prove efficacious, and it is "ethical."

Inhalations of eucalyptolized steam or formalin vapor several times daily are to be recommended; small inhalers containing menthol and solidified formalin are on the market. Eucalyptol, 2 to 3 drops every three hours usually will stop diarrhea; give on sugar and follow with *hot* milk and water.

The bowel must be flushed at least every other day with a mild antiseptic solution and the entire body sponged daily with this solution: Epsom salt, 1 ounce; water, 1 quart; carbolic acid, 10 drops. Half this strength solution serves admirably for enemata. Olive oil may be given freely, and inunctions of olive oil containing ten drops of guaiacol to the ounce are beneficial.

It often is well to begin treatment by saturating the patient with calcium sulphide, gr. 1-6, every hour while awake; but in the fibrous variety this drug is not indicated. Cactin is the heart tonic *par excellence*, and gr. 1-67 may be given, when indicated, with the before-meal medication. Have the patient wear a warm flannel belt. If a laxative

is needed give a saline laxative draught in the morning and at bedtime aloin, atropine and cascara, one tablet. Castor oil is, of course, preferable where intestinal "soreness" is evident.

The man who watches elimination and maintains nutrition, giving to the little patient such foods as agree, always subordinating theory to common-sense in the matter of medication and meeting conditions as they arise will save many otherwise hopeless cases. No "set treatment" is possible, for not two cases will present the same group of symptoms, but in each and every patient we always shall find lowered nutrition, systemic toxemia, organic torpor (with the accompanying derangement of the body chemistry and retention of effete matter) and a specific infection, the tendency of which is ever toward destruction of the cell. The lower the vitality, the more torpid the organs, the greater the autotoxemia, the more rapid and widespread will be the destruction. On the contrary, the nearer we can come to reestablishing normal conditions in the body the more likely is it that Nature will overcome the invading bacteria and repair the lesions caused by their presence. If in our egregious vanity we undertake to destroy the tubercle bacilli in their living fortress we may expect to witness destruction enough; indeed the ruin will be so complete that there will be nothing left to fight, or fight for!

CHAPTER IX

DISEASES OF THE UROGENITAL SYSTEM

In the new-born child the urine is highly colored and full of urates or uric acid. As the child begins to take more food the character of the urine changes and it is pale and often bears mucus. In early infancy albumin is not at all uncommon. The specific gravity varies, is high at birth, low at the end of the first week, and then gradually increases till it reaches 1020 at puberty. Hyaline casts may be found in the young child's urine, phosphates and chlorides increase with age as to sulphates. The infant micturates more often than the child or adult, passing water every hour or two. At two years a child can control the bladder for three or four hours. Irritable or weak children may pass urine involuntarily, wetting their clothes or the bed. To secure the urine from a male infant fasten a large condom over the external organs and watch till urine is voided; a small rubber urinal may be attached to the female child.

In the first six days of life the normal child will pass from 3 to 8 ounces a day, the specific gravity being 1004 to 1008; from the seventh day to the second month it passes from 5 to 13 ounces; specific gravity 1004 to 1010; from the second to the eighth month, 7 to 16 ounces, specific gravity as before; the amount of urea daily will be from 0.90 to 1.40, and the ratio of uric acid to urea 1:60 to 1:80. From the sixth month to the end of the second year the amount passed per day will be from 9 to 20 ounces, and the specific gravity will range from 1006

to 1012; ratio of uric acid to urea as before. From the second to the fifth year the output will be 16 to 26 ounces; specific gravity, 1008 to 1016; ratio of uric acid to urea, 1:50 to 1:70. To the eighth year, daily output 20 to 40 ounces, specific gravity as above; urea, daily quantity, 13.09 to 14.01. From the eighth year to fourteenth, daily output 32 to 48 ounces, specific gravity 1012 to 1020; urea, daily, 16.05 to 21.03; ratio of uric acid to urea, 1:45 to 1:60.

These figures are worth remembering as they enable us to get a reasonable idea as to the urinary conditions. For full data relative to urinary analysis and the urine in disease see Purdy's "Urinalysis."

ALBUMINURIA (FUNCTIONAL)

Without any other distinct signs of illness the urine at certain times is loaded with albumin. Strangely enough, albumin may be found in the urine of the child while erect but if he keeps the recumbent position for twenty-four hours it disappears. Boys from six to fourteen are most apt to present this phenomenon. Exercise, fatigue, overeating, or even a certain diet may produce cyclic albuminuria. I have thought that I could distinguish a peculiar pallor in these children and some darkness under the eyes.

If albumin is discovered in the urine and disappears, to return again and again to vanish, it is fairly safe, other symptoms lacking, to diagnose "functional albuminuria." The morning and night urine will be found free from albumin and casts are, of course, absent. If the albumin persists and increases or is present in the morning urine, look out for renal disease.

Treatment.—Simple enough: Give a small saline laxative draught every other morning, the arsenates after meals, and xanthoxylin, gr. 1-6, juglandin, gr. 1-6, and

cactin, gr. 1-134, between meals. Order a salt sponge bath at bedtime and plenty of distilled or mineral water to drink between meals. Sometimes ten drops of dilute phosphoric acid at meals will be the best tonic of all.

HEMATURIA

The cause must be discovered and treated. If the urine is cloudy and dark, suspect hemorrhage and examine with the microscope. Remember that blood from the bladder often comes with the last urine and is red, when from the urethra the first urine is tinged, when from the ureter it is apt to be found in small, cylindrical clots, but when from the kidney it is thoroughly mixed with the urine voided.

Malaria, scarlatina, scorbutus, purpura and other diseases may set up hematuria; a stone in the bladder or renal pelvis may cause bleeding as may a polyp (vesical) or other growth. Trauma may cause transient or profuse hemorrhage, and in rare instances the exhibition of quinine or potassium chlorate will bring on hematuria.

To relieve the bleeding administer a granule of atropine, gr. 1-250, and then put the patient to rest and exhibit barley water, fluid extract of triticum repens, hydrastin and hamamelin, one dram of the former and gr. 1-6 each of the last, every three hours. A cool enema often is desirable. However, the only rational treatment is directed against the source of hemorrhage. Oil of erigeron, ergotin, and helenin are to be considered. Arbutin, gr. 1-3, is perhaps almost specific in passive hemorrhages of unknown origin.

HEMOGLOBINURIA

Hemoglobinuria is met with in pediatric practice occasionally, without any reasonable cause being discoverable. It also may be a feature in malaria, typhoid, the acute

infections and purpura. Carbolic acid may cause it. The blood-pigment is plentiful in these cases but the cells scanty. In Winckel's disease the condition seems to be epidemic. There is said to be a hereditary tendency to the condition. The worst case I ever saw followed phosphorus poisoning.

Symptoms.—The urine is of a dark-red or almost black color, scanty, of high specific gravity, and on boiling, a brown coagulum results. Perhaps the child has had a chill and vomited just prior to the passage of the abnormal urine, then it is always wise to investigate for the plasmodium malariæ. Sometimes a mild rash of no definite type accompanies the attack, which may last from two to six days, the child being as a rule distinctly ill. Albumin is almost invariably present in the urine. In a great majority of cases there are present fever, disturbed circulation and cold extremities. I am inclined to think that the rash, fever, etc., have often been mistaken for measles, mild attacks of scarlet-fever, and so on, and am quite positive that all these features may be present as an integral part of the disorder itself. At the same time, it is equally positive that hemoglobinuria may accompany other diseases.

Treatment.—Malaria, diphtheria, influenza, etc., must be recognized, if existant, and treated. Syphilis must always be thought of, and treated or excluded, if possible.

If nothing definite can be discovered, give the child a thorough sponge-bath in carbolized epsom salt water, flush the bowel with decinormal salt solution, and put him to bed. Give him small doses of hyoscyamine, say, gr. 1-500 every three hours, and all the saline lemonade he will drink. Camphor monobromate, gr. 1-6; quinine hydroferrocyanide, gr. 1-67; ergotin, gr. 1-6, every four hours gives excellent results; brucine may be

added if the depression is marked. There seems to be almost always more or less hepatic congestion and so a few doses of ieptandrin, gr. 1-6, invariably do good work. In the case marked by cold extremities and rigors give glonoin to effect, and in place of the ergotin give cactin, gr. 1-67. Watch the urine carefully for some days after recovery.

PYURIA

Here, again, the source of the pus must be discovered. It may come from the kidney or other part of the urinary tract, or an abscess may empty into it through a sinus. In girls vulvovaginitis must be suspected, while in boys the possibility of a foreign body in the urethra has to be considered. One finds strange things in urethras sometimes.

Arbutin, gr. 1-3 to 1, every three hours, with 2-grain doses of formin (or the formin compound tablet) will be of unquestionable value, rendering the urine antiseptic from renal pelvis to meatus. A good preparation of hydrangea with triticum repens will also prove useful, but the medication must in every case be based upon a clear conception of conditions present. Saline laxatives are of service, and irrigation of the bladder with a 1 : 1000 antinosine or 1 : 1500 chinasol solution may be required. Echinacea will control systemic dyscrasia and calcium sulphide inhibits pus formation. Give either or both "to effect."

PYELITIS—PYELONEPHRITIS

Much that has been said under "Pyuria" applies here. Neither of these conditions are rare in childhood and in each pyuria is a symptom. It is very necessary that the true state of affairs be recognized early.

In pyelitis we have an inflammation of the renal pelvis, but at the same time the entire organ may be affected

(pyelonephritis), or the bladder may be involved (pyelocystitis), and ultimately we may have collections of pus in the renal tissues (pyelonephrosis). Usually only one side is affected, and recovery may take place even when one kidney has been entirely destroyed.

The cause sometimes is obscure: infection may extend upward (from a cystitis); calculi may set up inflammation; pyemia may be responsible, infection occurring through the blood-stream; tuberculosis is not an uncommon cause. Idiopathic pyelitis (from exposure to cold?) must be recognized, but is rare. Too often we find the condition follow the exanthemata and sometimes it accompanies gastrointestinal disorders, cholera infantum especially. Then it is invariably fatal. Bacillus coli communis has been found to be the cause of a pyelitis, and the condition has followed a specific vulvovaginitis more than once.

Symptoms.—Very distinct, but malaria must be excluded—many children being dosed with quinine to their detriment. There is usually more or less pain over the affected kidney, chills occur once or twice daily (sometimes oftener), and the fever then runs up to 104° to 105°F. Sweats are drenching in character and visual disturbances are not uncommon. The tongue is foul and the bowel apt to be constipated. The urine is acid and contains pus and renal epithelium. Alkaline urine would mean a cystitis—and this may be the original trouble. Catheterization under such circumstances is almost criminal.

In *pyelonephrosis* a distinct tumor often forms in the groin and during its stay pus may be absent from the urine; the tumor disappears, and the urine is immediately laden with pus; the pocket has emptied itself.

Mucus and some albumin will, of course, be found in the urine together with blood. Leukocytosis is marked and the patient slowly loses weight and acquires a waxy

pallor. In any doubtful case (especially with gastro-intestinal involvement) the Widal test should be made and the blood examined for the plasmodium malariæ. In mild cases the prognosis is fair; in severe cases (septic), poor.

Treatment.—In these days we can do much, whereas those who follow the methods of a decade ago are sure to lose eight out of twelve patients. With a clear idea of the pathological conditions present it is not difficult to select the right remedies, *but*—the physician's common-sense alone can teach him to use the *proper drug* at the *proper time*, relinquishing one drug earlier or later for some other, at that moment imperatively indicated.

First of all, empty the intestine and stimulate the liver to more than its normal activity. Calomel and iridin, aa. gr. 1-6, hourly for four to six doses, adding bilein, gr. 1-12, to every other dose, will be the remedies of choice. Two hours after the last dose a saline laxative draught should be given, and this will be repeated every morning. The bowel having been emptied, flush it well with decinormal salt solution and bathe the patient from head to foot with carbolized epsom salt water. (Proportions given earlier.) Every three hours have the patient take arbutin, gr. 1, with a dram of a good preparation of hydrangea, and follow with a draught of thin barley water. (The latter is important, only those familiar with its remarkable diuretic and soothing properties can appreciate *how* important.) Every four hours one formin compound tablet or urotropin, grs. 3 to 5, must be exhibited. Echinacea, gr, 1-3, should be given six times daily during the first two days, calcium sulphide, gr. 1-6, may then replace it for two days. Constant sponging with epsom salt water and the daily enema will usually keep down the temperature, should the latter assume a periodical form, give glonoin, gr.

1-250, to "break" the initial chill, and as soon as the reaction sets in, exhibit aconitine, digitalin and strychnine (dosimetric trinity) half hourly for three or four doses. The diet must be extremely light but highly nutritious (milk chiefly) and the room should be kept cool and thoroughly aired.

In ordinary cases this treatment will be effective and the patient convalescing in ten days. Should pus increase or sepsis become more evident, double the echinacea and by inunction, *over the kidneys*, exhibit one dram of unguentum Credé, twice daily. Highly acid urine will call for lithium benzoate (give it with the barley water). Pain will yield to hyoscyamine. (Suppositories may be used.) If the case "hangs," give 1 grain of methylene-blue four times daily for two days, with collinsonin, gr. 1-3.

This is one of the very few conditions in which the sulphocarbolates are not desirable. If an intestinal antiseptic is called for (it rarely is if the treatment outlined is given), use oxychlorine in free dilution. Do not be fearful too soon but be wise enough to have surgical intervention early enough in those cases which evidently demand it. Diminished urine (blocking of one ureter), intense pain, sustained hematuria, increasing sepsis, failing heart or pyelonephrosis will indicate surgical measures. In every case have the patient under a competent nurse.

RENAL CALCULI

Small uric-acid concretions are not uncommon in early childhood; their passage may give rise to colic. In older children there is pain over the affected side or down the thighs. Alkaline diuretics should be given with hydrangea or triticum repens (aqueous extract) and the child examined under the x-ray. If a large calculus exists, it must be removed. Calcium carbonate compound

(calcalith), consisting of calcium and lithium carbonates with a small proportion of colchicine is now regarded as the most powerful solvent of uric-acid concretions at our disposal; moreover, its exhibition prevents their further formation, the calcium combining with phosphoric acid in the blood-stream, forming calcium phosphate, and as such being eliminated through the bowel. The combination exerts a powerful eliminative action generally and should not be given for too long periods to children. Five grains with plenty of water three times daily for ten days will be ample. After a rest of a week its exhibition may be resumed.

GLYCOSURIA

Lactose will almost always be discovered in the urine of young children, and a certain quantity of sugar may appear at any time after the ingestion of an unusual amount of saccharine matter. Temporary traces of sugar, or large quantities for a brief period, need cause no alarm, but a steady sugar-content gradually increasing will usually mean diabetes mellitus, which see.

INDICANURIA

More than a trace of indican in the urine means autointoxication and, as we know today, autointoxication is one of the chief ills with which we have to contend. In duodenal catarrh traces of indican may be found together with bile and oxalates, but unless suppuration exist, or tuberculosis, indicanuria means intestinal indigestion, fermentation and absorption of toxic material. More or less rise of temperature, a furred tongue, headache and diarrhea may accompany indicanuria. As, however, these symptoms of autointoxication themselves usually attract attention before the urine is examined, the finding of indican serves rather as a proof of correctness than an aid to diagnosis.

Treatment.—"Clean up, clean out, and keep clean" the intestinal tract: blue mass and soda, gr. 1-2, and podophyllotoxin, gr. 1-12, half-hourly for four doses at night, a saline laxative next morning, first thing, and the sulphocarbolates, 5 to 10 grains, well diluted with water, every four hours for two days. Before each meal juglandin, gr. 1-6; strychnine arsenate, gr. 1-67, hydrastin, gr. 1-12, and after eating, the papayotin compound tablet, or papayotin, charcoal and soda if acidity is marked. In suppurative conditions calcium sulphide and nuclein will, of course, be essential. Light diet for a time.

ACETONURIA

Acetone is sometimes found in the urine in small quantities in health. It is also present in acid autointoxication (gastrointestinal disorder), some fevers, diabetes, and in the urine of those who have been for long without food.

Diacetic acid (*diaceturia*) is sometimes of diagnostic value, as its presence in quantity often precedes diabetic coma. In high, continued fevers, diacetic acid is always in evidence, disappearing when the fever falls. In nearly all cases it is well to give a course of alkaline medication, sodium bicarbonate or calcium and lithium carbonates being especially indicated. Very small repeated doses of calcalith will cause the prompt disappearance of acetone and diacetic acid.

ANURIA AND DIMINISHED OUTPUT OF URINE

In fevers or where for any reason a child refuses to take a proper amount of fluids a diminished urinary output will result. The highly concentrated urine may set up vesical irritation.

The remedy is obvious: give at least a pint and a half of barley water daily and pure, cool water every few hours.

Fruits are desirable and fruit juices in water excellent. A few granules of barosmin will act as a stimulating diuretic, say, gr. 1-6 every three hours. Sulphate of magnesium in the form of saline lemonade will also prove useful. Pilocarpine, gr. 1-67 three times daily, exerts an excellent effect upon the atonic kidney and is indicated wherever there is a decreased flow of highly colored urine, with a dry skin and hard pulse. In *retention*—anuria proper—with possible uremic poisoning, it is the remedy of choice, but then the small dose is given hourly "to effect." At the same time copious warm enemata (decinormal saline) are administered and the patient placed in the "wet pack." Many a life has been saved by these simple measures.

To give the pack effectively proceed as follows: On a bed or couch spread an oilcloth, over this a blanket or quilt; double a large sheet and wring it out of cold water, undress the patient, wrap him from neck to feet in the wet sheet, lay him on the prepared couch and roll the blanket well about him. Give him a hot drink and bathe his face (or apply cool cloths, if the patient is hot). Keep him there till he perspires freely, unroll him, dry quickly and tumble him into dry blankets.

In the anuria of the exanthemata gelsemin, gr. 1-134, and asparagin, gr. 1-6, every hour or two for three or four doses will give results. At bedtime give the same child ten to twenty drops of spirit of nitrous ether. Kava kava (specific tincture), twenty drops every two hours, is an excellent and practically harmless diuretic. Potassium acetate is indicated only where the tongue is furred and when a tendency to dropsy or lithemic conditions exists; here ten grains well diluted may be given every three hours, with good results. Potassium nitrate will seldom afford relief without at the same time setting up gastrointestinal irritation; the acetate or tartrate are infinitely preferable.

In anuria with cardiac complications and dropsy scillitin and apocynin must be given the preference.

Other diuretics will be given as distinctly indicated. I would here call particular attention to the value of barosmin (buchu), gr. 1-6, with one dram of a good fluid hydrangea, in the renal congestion of scarlatina—repeat every three hours and give barley water *ad libitum*. Diuretin and the synthetics should only be used in pediatric practice when their action is distinctly understood, and no other remedy seems to meet the indications properly.

ACUTE CONGESTION (HYPEREMIA)

This condition may be transient and due to exposure or the ingestion of some irritant or may precede nephritis. In fever it is frequently present and rarely trauma is responsible. The urine is scanty and high-colored; there is pain in the loins, also headache. On examination, the urine is found of high specific gravity, containing albumin and perhaps tube casts; some blood is apt to be present.

Treatment.—In uncomplicated, sudden cases put the patient to bed and place him on a milk and barley-water diet; give hot general or sitz-baths and high, *hot* saline enemata. Dry-cupping over the loins often is of benefit, or hot compresses may be applied. Salines may be given twice or three times daily for a day or two, with only good effect, and after a dose or two of atropine (gr. 1-500), aconitine and digitalin, in small dose, may be exhibited every two hours. In general excitation with flushed face and intense backache, gelsemin, gr. 1-134, hourly for three doses will work perfectly. A few doses of calomel given early are always useful.

CHRONIC CONGESTION

In many diseases of the heart, lungs and liver the circulation is disturbed and as a result renal congestion is

liable to ensue. Occasionally stasis is localized and the urinary symptoms alone afford us a clue; in other instances it is general and we have dyspnea, edema, cyanosis, and so on. A growth may cause pressure upon an important vessel and renal congestion result. Symptoms are similar to those just described; hyaline casts are common.

Treatment evidently must, to a very great extent, be governed by the primary condition. However, the patient should be put to bed and kept upon a light milk, barley-water and broth diet. Digitalin (alternated with digitonin), scillitin, and caffeine will prove the most useful diuretics for general use; but here again pilocarpine acts beautifully, and asparagin with ammonium benzoate will maintain the effect. In this condition blue mass exercises an undeniably beneficial action: 1 grain of blue mass and soda every hour from six to ten p. m. every third night, with a saline laxative on awakening next morning will bring about marked amelioration of conditions. In a great many cases it is well to give thirty drops of spirit of nitrous ether in two ounces of water every night at bedtime. It is of especial value in asthenic cases.

ENURESIS

Here, again, careful diagnosis is necessary. It is not pleasant to medicate a child for weeks for "bed-wetting," without appreciable result, and then see some old woman give a remedy for pinworms and put a stop to the whole trouble.

Enuresis nocturna and enuresis diurna rarely exist together, and when they do, we may look upon the condition as a neurosis with increased irritability of the vesical musculature and hyperesthesia of the neck of the bladder.

Occasionally the whole thing is due to faulty training, the child never having been taught to control itself, and whenever the desire to pass urine is experienced no inhibi-

tive impulse is conveyed from the brain, the sphincter vesicæ relaxes and the bladder empties itself almost automatically. These cases, when confirmed, are the most difficult of all to cure. Again, we shall find delicate, nervous children who will wet their clothes during the day, but never the bed. Here, engaged in play, the child too often waits till too late before seeking retirement and as a result wets himself. Boys are more liable to do this than girls. Boys and girls alike, however, comprise the class of "bed-wetters," and these are the patients we are most often urged to cure.

Before doing anything we must examine first the patient and then the urine. Indigestion, worms, spinal disease, stricture, fissure or fistula in ano, retention of fecal masses, or any one of many other abnormal conditions may cause enuresis. Adenoids, debility, adherent prepuce, undescended testicle, and hernia, each and all have caused persistent bed-wetting. On the other hand, lithemia, diabetes, cystitis, or hyperacidity of urine may be the direct cause of enuresis, and all treatment would fail that did not take such causative condition into account. Enuresis diurna may even be due to eye-strain, the fitting of a proper pair of glasses putting a prompt end to the undesired flow. Masturbation is a frequent cause in both sexes. If none of these abnormalities can be discovered we must look upon the disorder as a functional anomaly and try to improve the tone of the nervous system. That very simple medication suffices in these cases has been proved many hundred times.

Treatment.—Correct any abnormality, open the bowels, see that the child is properly fed and instructed that regularity in attending to the wants of nature is important. Dilate the sphincter ani if there is any excuse and circumcise if the prepuce is at all tight. Forbid (in nocturnal enuresis) water after six in the evening

and have the child micturate when the parents retire. Give in the "debility" cases (where no distinct or reflex cause can be found) atropine valerianate, gr. 1-500, brucine, gr. 1-67, hydrastin, gr. 1-67, thuja, gtt. 3, every four hours and an extra dose at bedtime.

The child should be told that this treatment *will* cure and that failure will probably necessitate unpleasant operative procedures. The physician must of course use his discretion here and not frighten a neuropathic child into hysteria, but a wholesome dread of consequences and a firm belief that the bed will *not* be wetted after a few nights' treatment often has a most desirable effect. A mustard-leaf applied over the sacrum once or twice exerts a physical and psychic influence, while cold sponging to the lower part of the body is also beneficial. In some cases of general incontinence gr. 1-1000 of cantharidin proves almost specific; it may be combined with brucine, gr. 1-67. The extract of rhus aromatica, gtt. 1-3 t. i. d., deserves a trial in spasmodic or lithemic cases occasionally; with thuja (gtt. 3), it will stop an intractable case in four days.

In *atonic* cases ergotin, gr. 1-6, and rhus toxicodendron, gtt. 1-5 (two granules), every four hours may be alternated day and day about with brucine and cantharidin. (See above.) Hyperesthesia of the deep urethra or sphincter vesicæ will yield to hyoscamine, gr. 1-250, every four hours. Delicate, anemic, nervous little girls require a course of iron phosphate and strychnine phosphate. One granule of each may be given an hour after each meal and a granule of amorphous hyoscyamine (or the calmative formula) exhibited at bedtime (in enuresis nocturna).

Occasionally the bladder requires irrigation, and more often the deep urethra of boys needs dilation with Oberlander's instruments. I have recently cured a case with

vibration and the galvanic current: positive pole on sacrum, negative over perineum.

It will be easily seen how liable a physician is to fail in these cases (even after careful thought) whereas another man may prescribe at random and "stop the leak" instanter. Study your patient, make quite sure that reflex sources of irritation do not exist, and then give the right remedy for the conditions you believe exist. The first formula given above usually will prove successful. Iron in some form is a useful adjuvant almost invariably.

DYSURIA

Seek and treat the cause: usually hyperacidity of urine. Hyoscyamine in small repeated dose, or strychnine, gr. 1-134, cicutine, gr. 1-134, hyoscyamine, gr. 1-500, digitalin, gr. 1-134 (antispasmodic), for a child of ten or over will relieve any spasm and stop pain. In the dysuria of fevers give large quantities of demulcent drinks (no acids) and saline laxative draughts. Always look for inflammation of the urethra or vulva. A caruncle may cause the most exquisite agony. A urethral diverticulum will do the same thing. Some neuropathic children have a sharp spasm before urination: cause unknown.

SPASM OF THE BLADDER (CYSTOSPASM)

Not an extremely rare disorder though some men may never see a case. The children of Germans who are given beer are especially liable to suffer. Onanism, cold baths, a loaded bowel, or hyperacid urine may induce spasm.

The symptoms are distinct. Young children draw up their legs and cry bitterly; priapism is usual and anuria general in boys; the bladder is felt to be distended; older children place their hands over the lower belly and say the pain "hurts here."

A dose of hyoscyamine, gr. 1-250, or atropine, gr. 1-500, (small always, repeating if necessary), and a few ounces of warm salt water thrown into the rectum gives relief. Occasionally it is well to catheterize carefully. Apply hot, moist compresses and insert a belladonna suppository. Have the child given plenty of water (saline laxative lemonade or barley water will serve best), and for a few days have arbutin, gr. 1-3, and eupurpurin, gr. 1-6, given every three hours. If due to onanism circumcise or blister the glans, keeping it just sore enough to make handling undesirable.

NEPHRITIS: ACUTE

Acute Bright's Disease: Acute Desquamative Nephritis.—An acute inflammation of the kidney. When various portions of the organ are more severely affected than others the condition is expressed in differing terms. For instance, when the whole kidney is uniformly affected we call the disorder *diffuse nephritis*, when the tubules are chiefly involved, *parenchymatous nephritis*, and where the glomeruli are the seat of disease, *glomerulonephritis*. The latter condition exists most often after scarlet-fever, though in the acute infections generally the interstitial tissues suffer, very destrutive changes taking place.

It is practically impossible for the average physician to diagnose closely enough to say positively that any one of these varieties exists alone: the kidney is affected, and we treat an acute nephritis. The pathology and histology of this disease require careful study.

As a primary disease it is not rare even in infancy, but more often we meet it in patients suffering from diphtheria, scarlet-fever, measles, pneumonia, and septic conditions generally. Postscarlatinal nephritis invariably assumes the form under discussion and the toxins of the disease may be set down as the infecting agent, through not rarely

the streptococcus also gains access to the part. Strangely enough, nephritis may follow a mild, well-treated case of scarlet-fever, while on the other hand, severe and neglected cases may show no sign of renal disease. It is more likely to occur where the patients are given but little water, the highly concentrated urine setting up an irritated condition which opens the way for germ-invasion.

Symptoms.—Primary acute nephritis may occur in infancy. Naturally it is not easy to recognize the disease there. Holt describes several cases and states that of twenty-four patients under two years, sixteen died. In ten cases encountered in his personal practice nine died—diagnosis confirmed by autopsy. The symptoms were high fever and vomiting coming on abruptly, the temperature being over 104° F., in most cases.

It is very essential that a pyelitis be not mistaken for a nephritis, and *vice versa*, neither must every albuminuria be looked upon as nephritic. In any renal irritation more or less albumin will be found in the urine but casts are scanty or absent.

In pyelitis pus is discovered early, albumin is scant and so are casts; in nephritis there is abundant albumin and casts with red and white blood-corpuscles and renal epithelium.

In infants the anemia is progressive and some diarrhea may exist; muscular twitchings and great restlessness may be noted, and later, dulness and apathy occur. In a few cases albumin does not appear at first, but hyaline, granular and epithelial casts will be found in every case. As Holt remarks, many mild cases are not recognized and severe attacks are liable to prove rapidly fatal.

In *older children* the primary form of acute nephritis is comparatively rare, the outlook is also better. The urinary findings vary somewhat but the amount of albumin is small; little blood exists and while hyaline, epithelial and granu-

lar casts are present, they are not plentiful. The onset is less abrupt and the temperature does not range above 103° F. Dropsy is rare; the amount of urine excreted is diminished, always.

There is more or less vomiting, and anemia slowly increases. The anemia, vomiting, fever, and urinary findings enable the practician to make a fairly positive diagnosis.

Secondary Nephritis.—Usually at the height of the primary disease the renal involvement becomes apparent. Careless or inexperienced physicians may fail to grasp the situation. There will be some increase of temperature, headache is complained of, and the urine becomes scanty and is high-colored. The child is liable to vomit, and edema will be noted, the first sign of which often will be puffiness under the eyes or about the ankles. In the third or fourth week of scarlet-fever nephritis is most liable to set in, and as in these days scarlet-fever should never last more than two weeks—if that—nephritis should not trouble us there. I believe that I have not seen a single case of postscarlatinal nephritis in eight years.

It is well to remember in examining the urine that the amount of urea excreted is always decreased. It is also well to suspect nephritis whenever fever, edema, pallor and listlessness exist together.

Treatment.—Milk diet in every form and in every case. Older children may take two or three pints of milk a day, "chewing" each mouthful so as to mix it well with saliva. Barley water may be given alone or mixed with milk, and after a few days kumiss, junket, butter-milk, etc., may be given for a change. Sour milk with a little sugar and a touch of nutmeg is nourishing and liked by most patients. Simply allow a quart of milk to "set" or "clabber," cool in the ice-box for a few hours and give a small bowlful sprinkled with sugar and dusted with a very little nutmeg. Fed thusly trouble is almost always averted. In the case

of infants modified milk and plenty of cool distilled water is called for.

Now come the medicinal measures. Too much drugging is dangerous: give only the remedies indicated and to "effect" always, sustaining vitality, increasing normal resistance, and resting the kidneys as much as possible by making the skin and bowel eliminate actively.

Rest in bed is imperative, always. In a primary case in older children give first of all gr. 1-8 of blue mass and soda, and iridin, gr. 1-6, every hour for four doses, and three hours later exhibit a full dose of effervescent magnesium sulphate in a glass of water. Give copious high enemata of decinormal salt solution twice daily, and apply (after a full sponge-bath) hot compresses wrung out of epsom-salt solution. This solution is always used for sponging. If the urine is scanty put the child in the wet-pack (see "Anuria") and do not give too much fluid, but exhibit glonoin, gr. 1-250, every four hours, and every two hours pilocarpine, gr. 1-67, asparagin, gr. 1-6, and digitalin, gr. 1-67.

The bowels are now clean, the skin will be acting freely and circulation should be equalized. Now it is often desirable to maintain just this condition: aconitine, gr. 1-300 (half a granule), digitalin, gr. 1-67, cicutine, gr. 1-67, every three hours will usually suffice, and every four hours asparagin, gr. 1-3, hamamelin, gr. 1-6, eupurpurin, gr. 1-6, may be given with barley water. If stasis is noted, give glonoin to slight redness of the face, and if the skin gets dry, push pilocarpine "to effect" and give a warm salt enema. If these measures fail, resort again to the wet-pack.

In threatened uremia these measures are essential and at the same time elaterin, two or three granules of gr. 1-67 (with menthol or other aromatic), must be exhibited hourly till free watery stools are secured. Potassium citrate or spirit of nitrous ether may be used occasionally, but I have almost discarded them.

Occasionally the heart becomes weak and the pulse small: here cactin, gr. 1-67, and brucine, gr. 1-67, every three hours for three doses (dropping all other medicines *pro tem.*) will reestablish normal conditions. In very serious cases with uremia threatening, open a vein and withdraw four to six ounces of blood, then inject into the same vessel eight to twelve ounces of normal salt solution. Caffeine (alkaloid), gr. 1-3, and pilocarpine, gr. 2-67, should also be given hourly for three doses, the patient being in the pack meanwhile. I have yet to lose a case of uremia under this treatment.

Salithia is in most cases the best saline eliminant, the lithia and small amount of colchicine added to the magnesium sulphate being highly desirable. Nuclein is of great benefit from the first and in every case the recovering patient should take six drops morning, noon and night, with one "dosimetric trinity" tablet (aconitine, digitalin and strychnine arsenate) every four hours, and hydrastin, gr. 1-6, and juglandin, gr. 1-6, half an hour prior to meals. Every third day for a month a mild mercurial should be given at night.

As the case progresses prepared meat-foods—somatose, sanguiferrin, panopepton, bovinine, etc.—may be given, and eggs, cream and red meats follow later.

Where anemia is very marked the blood-preparation may be given very cautiously with the milk, or fresh beef juice may be expressed from steak and given every three hours. Sometimes it is best to give this with a little peptonized milk, per rectum.

A case of acute nephritis—primary or secondary—requires most careful nursing and more careful medication. Go slow but be positive and have everything ready for an emergency: in many cases patients have been on the very brink of the grave more than once but "the right thing at the right time"—the prompt *meeting of conditions*—has

brought them through and today they are in good health and therefore, presumably, happy.

CHRONIC NEPHRITIS

Fortunately rarely met with in children. When it does exist it may be either the parenchymatous or interstitial form or both combined. Sometimes after the acute diseases nephritis persists, sometimes tubercular or syphilitic children are affected and, again, it may accompany chronic heart disease. Those unfortunates who develop arteriosclerosis before they reach puberty are liable to suffer from chronic nephritis, and once in a while we can ascribe the presence of the disease to no cause whatever.

Chronic Parenchymatous Nephritis.—Invariably there is edema; anemia is quite marked; digestive disturbances with diarrhea are common; headache is constant; vomiting not infrequent; the heart is likely to be enlarged and on auscultation we shall note that the aortic sound is accentuated and murmurs exist. Sometimes the child's belly assumes enormous proportions, owing to the extensive effusion, resembling nothing so much as a pear. The urine contains albumin in varying amounts, and fatty and granular casts; the quantity usually is reduced and the specific gravity high. The prognosis is far from favorable though some children recover under careful treatment. The disease may last five years or the patient succumb to some intercurrent disorder.

Treatment.—The patient should practically live out of doors and the skin must be kept active with warm epsom salt sponge-baths. Proteids should be reduced to the minimum but the diet should be highly nutritious and varied. Iron is essential, and the triple arsenates with nuclein (two after food) will prove the best tonic. Iron phosphate with hydrastin and quassin may be given prior to food, and papayotin, gr. 1-3, together with the sulphur

laxative tablet (two to four) exhibited after each meal. Salithia will be alternated with plain effervescent sulphate of magnesium every morning on arising, and if the liver becomes at all inactive calomel, podophyllin and bilein (one tablet) should be given at bedtime twice weekly. Cactin is the best "heart tonic" and gr. 1-67 may be added to the iron and hydrastin with advantage where indicated.

Have the child spend most of its time in the country, and the more milk it drinks the better (3 to 8 pints daily), and each day it should exercise in moderation, resting supine always afterward for an hour or two. Fish and poultry with scraped red meat may be allowed as improvement is noted.

The nitrites quite often are of real service. I have secured some really phenomenal results, in cases resisting other treatment, with sodium nitrite, gr. 1-3, avenin, gr. 1-2, arbutin, gr. 1-3, every four hours, and cactin, gr. 1-67, hyoscyamine, gr. 1-500, hydrastin, gr. 1-12, four times daily before food and at bedtime. The morning saline laxative and papayotin after food I have always kept up.

At all times acute conditions must be combatted promptly: it is well where the physician is distant to have someone in the family instructed just what to do in case of sudden exacerbations.

Chronic Interstitial Nephritis.—A very rare form; syphilitic taint generally present. In this form we do not have edema, but large amounts of pale urine of low specific gravity (1.001—1.005) will be voided. Indigestion, headache and neuralgic pains are the first evident symptoms often; high arterial tension and increasing sclerosis are distinctive features. Casts are not often found and the amount of albumin is small. The disorder runs a slow but very sure course and the outlook is poor. Treatment is practically as I have described above: the degenerative changes in this disease are extensive, the malpighian tufts becoming

fibrous. Hemorrhages are quite likely to take place late, but uremia usually closes the scene.

AMYLOID DEGENERATIVE (WAXY) KIDNEY

This disease is liable to exist in tubercular patients, and wherever suppuration (of the bones especially) is prolonged. The spleen and liver are enlarged and the patient presents a waxy appearance—or as it is often called, the "alabaster cachexia." The original disease causes anemia and debility and the renal condition may not be recognized till late. The amount of urine is greatly increased and albumin present in enormous quantities, the specific gravity is low, casts giving a distinct amyloid reaction are numerous.

Fortunately in these days when suppurative conditions are promptly checked this disease is not so often encountered: it frequently disappears when the primary disorder is cured. The course is slow, exacerbations and remissions being the rule: few cases last less than three years and many linger for eight to ten, much depending upon the surroundings, diet, and so forth. Uremia may cause death, or the patient succumb to pneumonia, pericarditis, pleurisy or pulmonary edema.

Treatment.—As in other forms of chronic nephritis. The main thing in every case is to overcome the primary disease and stop suppuration. Arsenic iodide, nuclein, calcium sulphide, calcium lactophosphate, iron phosphate and saline laxatives are all indicated. Chimaphilin and berberine with collinsonin and iridin will affect the hepatic and splenic conditions favorably. As a general thing, the treatment must of necessity be changed every few months.

PERINEPHRITIS

The cellular tissues about the kidney are inflamed. Resolution or suppuration may occur. Exposure or trauma

must be regarded as the usual cause though occasionally the condition is secondary to renal inflammation. This is uncommon, however, in childhood. The course is decidedly acute and the symptoms are easily recognized. There is uneasiness and increasing pain in the loin, some fever (often a preliminary chill) and tenderness upon pressure. The leg is moved with difficulty and the patient remains in bed. Scoliosis is usual, the concavity being toward the affected side, and the thigh remains flexed; extension of the limb causes pain.

Not infrequently the disease is diagnosed as "hip-joint disease" (tubercular?). In the latter case the onset is gradual, there is wasting of the limb and shortening: total limitation of movement is also present, whereas in perinephritis extension alone is difficult—but always possible. The case may run along for weeks and the abscess finally burst. Unless it empties into the peritoneal cavity the prognosis is good.

Treatment.—At the very first, rest—absolute—in bed, a thorough mercurial purge, and saline laxatives twice daily, with aconitine, gr. 1-500 to 1-300, and digitalin, gr. 1-134, every two hours; cold epsom-salt compresses and inunctions of colloidal silver ointment or liberal applications of libradol. I have been able to put an end to two cases by applications of cantharidal collodion followed by ichthyol and lanolin. If the effect of cantharides is feared (there is no danger if care is exercised), apply oil of turpentine (Merck), cover with flannel, and after three hours spread the part thickly with ichthyol, one ounce, and eucalyptol, 20 drops. Internal treatment as above.

If suppuration has begun, purge the patient, saturate him promptly with calcium sulphide, gr. 1-6 hourly, and exhibit echinacea, gr. 1-3, every two hours. Nuclein, ten drops three times a day, and a saline laxative draught

morning and night. Support the strength and give a nutritious but easily assimilated diet. Control hyperpyrexia by sponging and small doses of aconitine. Heat locally, either the glycerinized pastes of the market or hot epsom salt compresses. *Do not use poultices.* As soon as possible evacuate the abscess and drain. The arsenates and nuclein, with a bitter tonic (quassin, hydrastin, xanthoxylin) should be given for weeks after recovery. I have known instances where absorption of pus and recovery has followed the use of this formula: ichthyol (carbenzol is just as effective), 10 parts; resorcin, 5 parts; mercurial ointment, 35 parts; lanolin, 50 parts. Apply thickly and cover with hot compresses.

COLICYSTITIS

A disease which has received little or no attention until quite recently, the majority of textbooks failing even to mention it. Nevertheless the doctor whose work lies chiefly among children must have encountered more than one case and while labelling it cystitis wondered just why the disorder assumed such peculiar aspects and what caused the intermittent fever which persisted despite ordinary treatment.

Colicystitis most often affects girls and is due to the invasion of the vesical mucosa by the bacillus coli communis. It is liable to appear after an enteritis and Trumpp suggested that the bacteria migrated through the short female urethra, but as today we know that boys also suffer it is more probable that entrance is gained through breaks in the intestinal mucosa.

The disorder presents in two distinct forms, a mild and a severe one. In the first, or mild, the systemic disturbances are slight and the vesical spasm fleeting: the train of symptoms disappears in two or three weeks under antiseptics. The urine, which is at first flocculent,

acid and contains albumin and bladder-epithelium, turns dark, appearing almost like beef juice; at this stage bacteria swarm in the urine and spasms are worse. Some tenderness exists on pressure over the viscus. In a few days, even without treatment, the urine begins to clear up, the temperature gradually drops, and recovery begins.

In the *severe type*—which may follow the former—all these symptoms are aggravated and the condition may persist for months, the health of the patient gradually giving way meanwhile and, not infrequently, nephritis setting in. The urine in such cases has a very fetid odor, contains pus and large amounts of albumin and on standing becomes almost opaque. Anorexia is at this time pronounced and food taken is vomited soon after; diarrhea is also apt to add to the discomfort of the patient. It is not improbable that the disorder may run a latent course and an examination of some cachetic patients recovering from enteric disorders would perhaps reveal a colicystitis.

Treatment.—In the early stage this is promptly effective and even when the most pronounced symptoms obtain they can be controlled and dissipated in two or three weeks. Cleanse the external genitalia carefully, flush the bowel, and irrigate the bladder with four to six ounces of a warm solution of lysol, 1-4 percent. Tricresol or antinosin (1 : 1000) is quite as effective—the latter I prefer early. Repeat the process daily and see that the solution is retained for a few minutes.

Salol and formin should be given in alternation every three hours, grains 5 of the first and 2 to 4 grains of the latter. The formin compound tablet is excellent. A saline laxative daily is beneficial, and about an hour after each meal grains 5 of the sulphocarbolates in free dilution should be administered to secure intestinal cleanliness; moreover, the sodium sulphate eliminated via the

kidneys exerts a beneficial action as does also the carbolic acid which is set free. In the worst cases 1 grain of methylene-blue may be exhibited four times daily for two days and then the salol and formin compound used as above. Hydrastin and arbutin, gr. 1-6 each, should be given three times a day for some time after normal conditions are restored.

CYSTITIS

A simple cystitis is frequently encountered, even infants in arms suffering occasionally. In the infectious diseases the conditions may cause a great deal of trouble. When complicated with renal infections it is not always easy to judge which was the primary one. Neglected vesical infections frequently extend *upward* and cause pyelitis, etc. As gonorrheal infections are not infrequently encountered among the poorer class of children in the large cities (and, alas! elsewhere also) a specific urethritis or vulvovaginitis may easily lead to a severe upward infection. Catheterization or the pushing of unclean articles (pipe-stems, hair-pins, pen-holders, etc.,) into the urethra by inquisitive or libidinous children may cause cystitis. I have seen more than one case arise from sitting upon the wet grass or cold steps. Any abnormal condition of the urine may so irritate the vesical mucosa as to render infection easy.

The *symptoms* are those found in colicystitis: there is tenesmus (rectal and vesical), the infant or child crying before voiding urine, which is but little in amount; later the bladder may empty with a gush. In girl patients there may be more or less vulval inflammation from contact with urine.

The *urine* itself may be either alkaline, acid or neutral and it contains pus, bladder-epithelium and (generally) some albumin. Mucous shreds often are abund-

ant; in rare cases of diptheritic character the entire vesical membrane may be voided. If the cystitis has existed any length of time there will be more or less derangement of the health and probably some temperature.

Treatment.—Practically the same as that given for colicystitis. The bladder must be thoroughly irrigated, twice daily, with either a 3-percent boric acid, 2-percent ichthyol, or a mild oxychlorine solution. Antinosin, 1 : 1000, has given me the best results; but a 0.5-percent solution of lysol or creolin often clears up a case promptly. It is best to rinse the bladder first with the boric acid solution, using a double-current catheter (glass) and then throw in four to six ounces of the medication selected. Enemata of decinormal salt or epsom-salt solution are helpful, while saline laxatives must be given daily.

Internally, if the urine is acid, lithium benzoate should be alternated with arbutin, gr. 1-2 to 1; if alkaline, ammonium benzoate, 4 grains, should be used. Plenty of barley water must be given with *small* doses of hyoscyamus to relieve pain; if the latter is intense, *cold* enemata may be given (using the psychophore or other return-flow apparatus) and hyoscyamus or belladonna suppositories inserted into the rectum. In all cases one to two drams of a good preparation of triticum repens (tritica) should be given every three hours (in barley water), and if the amount of urine is below normal, give barosmin, gr. 1-3 four to six times daily.

As the condition improves give methylene-blue, gr. 1 every four hours for two days, and then conclude treatment with either arbutin, gr. 1-3, or asparagin, gr. 1-3, and the formin compound (one-half tablet) alternately, every three hours. If lithemic conditions are present give calcalith, 5 grains four times daily, and salithia in place of plain magnesium sulphate (saline laxative) each morning.

Use great care in catheterizing and have one catheter always in an antiseptic solution ready for immediate use. As a lubricant use one of the sterile iceland-moss jellies now procurable in tubes. Animal grease (or even vaseline) is objectionable.

DIABETES INSIPIDUS

Hardly ever observed among children, but it does occur. The symptoms are precisely similar to those observed in adults: thrist, dry skin, immense output of urine (low specific gravity), and progressive emaciation; skin diseases are not infrequent. Children affected fail to grow and are liable to contract any and every disease, frequently succumbing quickly to them. A luetic taint may be regarded as the cause of some cases. Such patients are curable; in others the prognosis is doubtful as to cure.

Treatment.—Arsenic iodide, gr. 1-67, after meals for one week, then arsenic bromide, gr. 1-67, for another week, with hydrastin, gr. 1-6, juglandin, gr. 1-6, and brucine, gr. 1-134, half an hour prior to food have given remarkable results. Nuclein, eight drops, must be exhibited morning and night, and with each meal the patient gets give one dram, or one tablet, of sanguiferrin or similar blood-preparation. After using arsenic for two weeks it is well to substitute ergotin, gr. 1-3, and hamamelin, gr. 1-6, for two weeks, and then return to the first medication. A nutritious diet is essential as is also a clean bowel and active skin. Salt sponges daily. If the amount of urine remains excessive give hyoscyamine, gr. 1-250, t. i. d. Do not use opiates.

DIABETES MELLITUS

Glycosuria is unhappily not rare among children, especially those living in tenements or illy constructed

unsanitary houses anywhere. It is peculiarly prevalent in the Jewish settlements. It appears to run sometimes a phenomenally swift course: a child supposedly well being "taken sick" one week and dying the next, or within the month at best. Of course it is possible that the disorder had existed in a latent form for some time prior to the supposed onset, but it is difficult to see how a bright, happy, energetic, hungry, ambitious child could be very ill; and yet just such little ones all of a sudden become depressed and refuse to eat, headache is complained of, boils and gastrointestinal disorders attract direct attention, and the doctor is sent for to find the urine loaded with sugar and diabetes well advanced. It is in such cases that death follows (or has followed) so quickly.

In ordinary cases thirst, dryness of the mouth—with a peculiar redness of the mucosa—polyuria (enuresis), anorexia, visual disturbances, crops of furuncles, nervous storms, anemia and emaciation form the clinical picture. Eczema, pruritus, cataract, retinitis, phthisis, and a host of other disorders may make their appearance in the diabetic patient. Ataxia (Friedreich's) and diabetes often coexist, but diabetes appears last, as a rule. Death may occur from exhaustion, some intercurrent disease, or during diabetic coma.

In the quickly appearing, severe cases the prognosis is unfavorable; in ordinary cases, treated by modern methods it is distinctly good.

Treatment.—Strict "diabetic" diet must be ordered. Sugar in any form is taboo: saccharin takes its place; milk, butter-milk, and milk and vichy, with plenty of lime-juice and water (sweetened with saccharin) will prove the best beverages. Lean red meats, poultry, fish, asparagus, spinach, turnip tops, water-cress, lettuce, dandelion, tomatoes and mushrooms all are excellent. The gluten

flours, etc., now on the market enable the diabetic to get plenty of farinaceous food. Almond bread and nut-meal cakes afford a change. Indeed, nuts may be eaten (well-masticated) freely at two meals a day. A typical diet-list follows:

MAY TAKE.

Soups:—Soups or broths of beef, chicken, mutton, veal, oysters, clams, terrapin or turtle (not thickened with any farinaceous substances), beef tea.

Fish:—Shell-fish, all kinds of fish, fresh, salted, dried, pickled or otherwise preserved (no dressing containing flour).

Eggs:—In any way most acceptable.

Meats:—Fat beef, mutton, ham, bacon, poultry, sweetbreads, calf's head, sausage, kidneys, pig's feet, tongue, tripe, game (all cooked) free of flour, potatoes, bread or crackers).

Farniaceous:—Gluten porridge, gluten bread, gluten gems, gluten biscuits, gluten wafers, gluten griddle cakes, almond bread or cakes, bran bread or cakes.

Vegetables:—String-beans, spinach, beet-tops, chicory, kale, lettuce (plain or dressed with oil and vinegar), cucumbers, onions, tomatoes, mushrooms, asparagus, oyster-plant, celery, dandelions, cresses, radishes, pickles, olives.

Desserts:—Custard , jellies, creams (without sugar), walnuts, almonds, filberts, Brazil nuts, cocoanuts, pecans.

Drinks:—Tea or coffee (without sugar), pure water, peptonized milk.

MUST NOT TAKE.

Liver, sugar, sweets or starches of any kind, wheaten bread or biscuits, corn bread, oatmeal, barley, rice, rye bread, arrowroot, sago, macaroni, tapioca, vermicelli, potatoes, parsnips, beets, turnips, peas, carrots, melons,

fruits, puddings, pastry, pies, ices, honey, jams, sweet or sparkling wines, cordials, cider, porter, lager, chestnuts, peanuts.

Sour milk is really of value (directions for its preparation have been given under Acute Nephritis). Epsom-salt sponge baths daily mean a great deal to the patient; regular (moderate) out-door exercise and progressive calesthenics almost as much.

Medicinally, nuclein, neuro-lecithin, and the following formula are essential: Strychnine arsenate, gr. 1-134; lithium benzoate, gr. 1-3; iron arsenate, gr. 1-67; quassin, gr. 1-67. One such dose is given before each meal, and arsenic bromide, gr. 1-67, with papayotin, gr. 1-3, after food. The usual dose of nuclein is small, 4 drops morning, noon and night, and, midway between meals, half a tablet of neuro-lecithin is exhibited with cactin, gr. 1-134, and hydrastin, gr. 1-6.

After two weeks the arsenic bromide is stopped and the sulphur laxative combination (two to three granules) given in its stead for a week, and a small dose of saline laxative is ordered each morning on awakening. This insures elimination. During this week it is well to give two grains each of sodium and calcium sulphocarbolates with water one hour after food. It there is any tendency to constipation (which is rare under this treatment) give aloin, atropine and cascara, one granule every other night. If, on the other hand, diarrhea is troublesome, give 4 grains of zinc sulphocarbolate in place of the sodium and calcium salts.

Alternate treatments thus for two months, weighing the patient every week and testing the urine at the same intervals. In less than a month sugar should have disappeared and the weight should in that time have increased a pound or two at least. If after this period no sugar has been seen for two or three weeks and the patient has

gained in weight, stop the arsenic and give in its stead sodium salicylate, gr. 1, and codeine, gr. 2-67. If the patient still continues to gain after two weeks, gradually add to the diet and reduce all medicines very gradually. If, however, sugar reappears return to the first treatment.

In rare cases (advanced) sugar persists despite most careful diet, here push any efficient preparation of jambul, 20 drops every three hours, in place of arsenic bromide, and after each meal with the papayotin give gr. 1-12 codeine. Stop the latter as soon as sugar disappears. As soon as control has been obtained, place the patient on the strychnine, lithium, iron and quassin combination before meals, one dosimetric trinity morning and night, with five drops of nuclein and, after food, two triple arsenates granules. A saline laxative every other morning.

CHAPTER X

DISEASES OF THE DUCTLESS GLANDS

This is an important group of diseases. At present—especially in Hodgkin's and Addison's disease—we are not able to secure very pronounced results from treatment.

HODGKIN'S DISEASE

This disease, also known as pseudoleukemia or general lymphadenoma, is most distinctly a disorder of early life, the great majority of cases occurring before the age of thirty and fully one-fourth before twelve. However, it may be regarded as a comparatively uncommon disease in the United States though more and more cases are reported as diagnostic acumen becomes more general.

The cause is not yet definitely known but is probably of infectious nature. The spleen and various chains of glands are enlarged (simple hyperplasia) and lymphoid growths of various sizes exist throughout the liver, spleen and other organs. The external glands are chiefly affected, the cervical and axillary chains sometimes attaining an immense size rapidly; in other cases the change is slowly accomplished and *anemia* first attracts attention. The bone-marrow undergoes degeneration in a majority of instances. There is an irregular fever (intermittent) and quite often the enlarged glands press upon vessels or the trachea and cause great distress. Edema, dyspnea, pain, partial paralysis, and cough are due to pressure.

An examination of the blood in the early stage may reveal nothing important but later a great increase of lymphocytes is observed. Suppuration or caseation never occur unless tuberculosis complicates or a secondary infection takes place. The absence of leukocytosis enables us to distinguish the disease from leukemia though some writers regard this as the first stage of the latter, and as there is no matting of glands or caseation we can exclude tuberculosis. The tuberculin test is negative also. The prognosis is poor.

Treatment.—No drug gives the results obtainable from arsenic; the arsenates of iron, quinine and strychnine may be alternated week and week about with arsenic iodide (gr. 1-67). Nuclein is of advantage, and strong solutions of potassium iodide may be applied on compresses and the drug driven in by cataphoresis. Stillingin and rumicin have seemed to hold the disease in check (aa. gr. 1-3, t. i. d.), but arsenic in some form must be given also. Potassium arsenite (Fowler's solution) may be used, beginning in 3-drop doses after meals, increasing one drop daily till 20 or 30 drops are given. Sanguiferrin is of decided value and should be exhibited with meals. Berberine unquestionalby reduces the size of the spleen: gr. 2-67 to 4-67 should be exhibited every four hours, and calx iodata, gr. 1-3, may be added with advantage. Recently, light-treatment has given some good results, and where only one chain of glands is involved (early cases) iodine-vasogen may be given by innuction.

STATUS LYMPHATICUS

This condition may be associated with rickets. It has a tendency to disappear at puberty; however, it is a serious disorder, the most trivial accident sometimes bringing on death; in not a few instances a fall has been followed by instant dissolution. The symptoms are

well known: general hypertrophy of the lymphatics exists, the thymus and spleen may be of enormous size, and hyperplasia of the vascular system is general; the child is chlorotic, adenoids or enlarged tonsils may give rise to mouth-breathing and a foolish expression. The *cause* is unknown.

Treatment.—Iron iodide, berberine and calx iodata will be the best remedies, together with nuclein and prepared blood-foods. Elimination must be maintained and the skin kept active. Phytolaccin, gr. 1-6, and iron iodide, gr. 1-12, half an hour after food, and berberine, gr. 1-67, and calx iodata, gr. 1-3, an hour before meals will prove an excellent combination. The nuclein (gtts. 10, twice daily) is best given hypodermatically. A change may be made after a time to the triple arsenates with nuclein (two tablets after meals), and either potassium iodide, 2 grains, or the "triiodide" tablet (one) may replace the iron. The diet must be highly nutritious. Massage and daily salt sponges will prove helpful.

ACUTE ADENITIS

Either the superficial or deep nodes may be affected. The condition is usually seen after a bronchitis, pharyngitis, or localized inflammation, but not at all infrequently adenitis will follow rubella or other of the exanthemata. In nine out of ten cases the cervical glands are affected and the inflammation may subside (as it will under treatment) or go on to suppuration. Children under five are most liable to suffer. Glandular fever must be excluded. The acute onset and course of disease will enable us to differentiate the disorder from tuberculosis, while parotitis —affecting the parotid mainly—will be easily distinguished.

If another disease exist it will of course receive proper attention. The adenitis which follows scarlet-fever and

influenza should be very promptly and positively treated, otherwise suppuration is almost assured. After vaccination the axillary nodes may become inflamed, and a most rebellious adenitis may follow eczema of the scalp. The disease is usually unilateral.

Treatment.—The doses mentioned below are for young children; in older patients give double the amount of the drugs specified. Many of the medicines named will be already in use in secondary cases and of course will serve a double purpose. Give calomel, gr. 1-10, and iridin, gr. 1-12, every hour for three hours every night for three days; a half teaspoonful of salithia (in form of saline lemonade) early next morning. Calcium sulphide, gr. 1-6; phytolaccin, gr. 1-6; rumicin, gr. 1-6; four times each day and if possible twice during the night. The granules may be put in a small capsule which is dipped in water and flipped down the throat. Into twelve teaspoonfuls of water place four granules of aconitine and digitalin: give 20 to 30 drops every two hours till the temperature drops to 99°F.

Rub over the affected area a piece of unguentum Credé the size of a navy-bean (rub it in *well*) morning and night and then apply a compress wrung out of a saturated solution of epsom salt—carbolated, ten drops to the pint. Over all place a piece of oiled silk and bandage. In eight out of ten cases this treatment, instituted early, will positively abort the process. If suppuration is inevitable, apply heat, continue treatment and incise at earliest moment. It may be necessary to curet the cavity. If so, pack with euarol gauze.

CHRONIC ADENITIS

Here there is a constant enlargement of the lymphatic glands. They are *hard* and no systemic disturbance is apparent; eczema, a chronic sore or a decayed tooth

may set up the condition, as may several attacks of acute adenitis. Suppuration is improbable. It is not always easy to exclude tuberculosis but careful observation will usually lead to a positive diagnosis. Hodgkin's disease presents different features entirely.

Treatment.—Look carefully for and remove any possible cause. "Clean up and keep clean" the primæ viæ from mouth to anus, and push phytolaccin, rumicin and the arsenates with nuclein. Calx iodata and iron iodide may be given t. i. d. on alternate weeks. Small doses will suffice. The daily epsom-salt sponge bath will hasten results markedly. Nutritious diet.

Tubercular and syphilitic adenitis will call for the regular treatment for the main disease, and, locally, the measures already recommended. In tubercular patients guaiacol is of benefit, locally as well as internally.

DISEASES OF THE THYMUS GLAND

Even the functions of this gland are not known. It is subject to atrophy and hypertrophy. Normally it grows rapidly from birth till the second year then more slowly till thirty, when it commences to shrivel. In marasmus the gland decreases in size as it does also in infantile atrophy. It often is the seat of abscesses or tumors in tubercular or syphilitic patients. In acromegaly, leukemia, Hodgkin's disease, Graves' disease, and sometimes epilepsy, the thymus is hypertrophied. Sudden death may accompany great enlargement; we do not know just why dissolution occurs, but a seemingly perfectly healthy active child with enlarged thymus may die in five minutes; sometimes slight cyanosis is noted for a short time prior to death. Asthma may be caused by intrathoracic pressure; edema, cyanosis, marked dyspnea, and conjunctival hemorrhages may occur.

Treatment.—This is surgical; the gland must be removed. In some cases calx iodata, gr. 1-3; potassium iodide, grs. 2, and phytolaccin, gr. 1-6, t. i. d., together with an active preparation of the adrenals will exercise a good effect. Sulphur, hydrastin and rumicin may be given in alternation, gr. 1-3 of each, Iodine or carbenzol locally or magnesium sulphate solution on compresses with galvanism.

ADDISON'S DISEASE

Extremely rare in childhood. The skin is bronzed and even the mucosa shows excessive pigmentation. The cause is known to be disease of the adrenals or the sympathetic ganglia (abdominal); tuberculosis is probable. The pulse is rapid and thready, cachexia marked, and gastrointestinal irritation pronounced; anorexia usually obtains.

The disease is considered fatal, but gr. 1-2 to gr. 1 of desiccated adrenal substance or adrenalin chloride solution (gtts. 2) may be tried every four hours, together with hydrastin, gr. 1-12; rumicin, gr. 1-6, and brucine, gr. 1-134, four times daily. Cactin is the best cardiac tonic and radiant heat (electric light) or steam baths have given results. Juglandin and cerium oxalate will control gastric irritability. Nuclein is always indicated.

DISEASES OF THE SPLEEN

More or less splenic engorgement is noted during the acute infectious diseases and in malaria; if the organ can be palpated below the ribs it is abnormal, but it is not always easy to find it. In typhoid, the spleen is likely to remain enlarged for some time, and in most of the chronic diseases of children engorgement obtains; in syphilis it may or may not exist. If the child is placed in a strong light the physician may observe an enlarged spleen rise

and fall with inspiration and expiration; in some cases the vessels over the splenic area are enlarged and, occasionally a murmur (blowing) similar to that heard in the pregnant uterus may be detected when the spleen is grossly enlarged. It is well to remember that a loaded bowel may cause dulness and lead to a diagnosis of "enlarged spleen." The spleen may "wander" (*floating spleen*); operation or the application of a properly adjusted pad and belt will be the remedies. If the pedicle twists, operation must be done instantly.

Perisplenitis may be caused by extension of inflammatory processes: trauma, infarcts, tuberculosis, or syphilis. Pain is pricking or stabbing, and acute. A friction-sound may be heard or the whole organ may be adherent and fixed.

Treatment.—Primary conditions demand attention: berberine, aconitine and hydrastin will follow the exhibition of hyoscyamine (continue to relieve pain), and locally iodine-vasogen should be applied daily. A blister often relieves. Keep up elimination and stimulate the liver.

In *splenitis* ergotin, gr. 1-6 to gr. .1-3, with berberine, gr. 1-67, will be given every three hours, and small repeated doses of aconitine, digitalin and strychnine exhibited to control temperature; guaiacol, oil of turpentine or libradol locally. Quinine arsenate, gr. 1-67, iron iodide, gr. 1-67, and nuclein will usually be indicated every four hours.

In *malaria* quinine hydroferrocyanide, gr. 1-67; cotoin, gr. 1-6; iron arsenate, gr. 1-67, should be alternated with berberine and ergotin. Saline laxatives daily and calomel and iridin every third night. For *amyloid spleen* see "Amyloid Degeneration of Kidney."

DISEASES OF THE THYROID

Goiter (simple) exophthalmos and myxedema are the principal diseases in which this gland is involved.

Cretinism is seemingly becoming more common, but fortunately we are today able to improve the patient's condition markedly. Simple goiter yields to treatment in the majority of cases, in two to three months.

Goiter.—The symptoms of goiter (bronchocele) are so well known and easily recognized that it is needless to give space to description. There is most undoubtedly a form of epidemic goiter which assumes a mild aspect and may subside of itself; it may be found in schools, "homes" and tenements. In its early stages goiter causes no particular trouble but as it gains in size circulatory and respiratory disturbances are noted.

Treatment.—This is positive and the prognosis, therefore, good in nearly every case. The patient receives, for two weeks, calx iodata, gr. 1-3, phytolaccin, gr. 1-6, and ergotin, gr. 1-6, an hour before food; after each meal arsenic iodide, gr. 1-67. The following week the calx iodata is dropped and iron iodide, gr. 1-12, substituted; the arsenic after meals yields to iridin, gr. 1-3. In one week the first treatment is resumed. Each morning, at noon and at night, one dosimetric-trinity granule is given, and at bedtime the patient envelops the neck in a compress wet with a carbolated solution of epsom salt. The next week a solution of potassium iodide is used. Alternate week and week about. If possible, apply vibration twice weekly. At the end of a month give two to five grs. of desiccated thyroid or one of the thyroid extract tablets, thrice daily, for two weeks, and with each dose exhibit phytolaccin, gr. 1-3. Also give the sulphur laxative after meals. If the goiter has not almost disappeared after two months' treatment, recommence the original medication.

Cactin or sparteine will prove the best cardiac tonics; dyspnea disappears (as does vertigo) after a week. The bowel must be kept open with saline laxatives.

In vascular goiter a course of atropine will prove useful, and 15 minims of a 10-percent alcoholic iodine solution may be injected twice weekly into the growth. Treatment otherwise as above.

The galvanic current is useful, one pole being a pad saturated with potassium iodide solution.

Myxedema and Cretinism may be considered together, the same treatment applying. For thorough description see Holt, Koplik, or Graetzer-Sheffield. Modern treatment works wonders, despite the rather pessimistic statements of these writers.

The child is given a salt sponge-bath daily and is kept in the open air as much as possible. Fresh thyroids are chopped up and given in sandwiches or *au natural* with a little salt. Nuclein is pushed for one month in 10-drop doses, morning and night, and arsenic iodide and iron iodide are given one hour after meals, day and day about, for a like period. Sanguiferrin, one dram, with meals. At the end of a month exhibit thyroid extract or iodothyrin, t. i. d., and calx iodata, gr. 1-3, phytolaccin, gr. 1-6, and rumicin, gr. 1-6, morning, noon and night for another month. Continue sanguiferrin with meals. Flush the intestine every third day, dilate the sphincter ani; circumcise; and if lime salts are markedly lacking, give calcium lactophosphate, one granule (gr. 1-6) four times daily for ten days, resting ten days and repeating. I cannot lay enough stress on the necessity for alternation of these remedies.

It may be well to add that avenin relieves many of the nervous symptoms, and where there is congestion of the sexual centers leading to continuous masturbation, this drug together with gelsemin, gr. 1-250 every four hours, gives prompt relief. Give full dose, gr. 1-2 to gr. 1.

Don't let any case of infantile myxedema or cretinism go untreated: even where the child is twelve years old,

and seemingly a "hopeless idiot," these measures and careful mental training will sometimes work what looks like a miracle. Massage with olive oil is beneficial.

Acromegaly.—Treatment here is useless: we can only improve elimination and nutrition, meeting symptoms as they arise. The above treatment may be tried early.

Exophthalmos (Basedow's Disease, Graves' Disease).—Not very frequently seen in early life, older children and young adults (female) suffering most. The protruding eyeballs, tremors, rapid pulse and enlarged thyroid are diagnostic. Early there may be any one of these symptoms —rarely two—but quite often weakness, headache and lassitude alone mark the beginning of the disorder. Struma is general and tachycardia the rule; throbbing of the carotids and temporal arteries will almost always accompany the enlargement of gland; exophthalmos may be an early feature or appear late, occasionally it is practically absent. In childhood the thyroid enlarges more rapidly than in the adult. An entire change in the child's disposition will be noted, and diarrhea, vomiting, anorexia, hysteria, excessive perspiration, and irregular fever may cause the parents to bring the child to the physician.

Naturally, in such cases a diagnosis is not easily made but close observation should lead to a correct decision.

Treatment.—The earlier it is begun the better. Hyoscyamine, gr. 1-500; ergotin, gr. 1-6, and iron iodide should be given three times daily between meals; half an hour before food give avenin, gr. 1-3, and two desiccated thyroid tablets or a medium dose of the extract (glycerinated). After food, arsenic bromide and arsenic iodide (gr. 1-67) are alternated week and week about till slight signs of arsenical sufficiency are noted. Then substitute rumicin and iridin, gr. 1-6 each. Return to arsenic after two weeks. Cactin may be necessary, and sodium salicylate, grs.

5 to 10, t. i. d., will sometimes give great relief in marked cases.

Rest is essential, and salt sponge-baths, massage and general vibration prove beneficial. The sinusoidal current has been said to exert an almost specific influence. A serum from thyroidectomized sheep or goats has also been lauded lately; in my own hands it has proven inert, but as half a dram must be given every four hours for months it may be I did not persevere long enough. The treatment outlined has at least invariably proven markedly palliative in one-third of that time. Where the cardiac symptoms are excessively pronounced (beating of carotids, "swimming of head," tachycardia, etc.) a few doses of hyoscyamine, followed by gelsemin, give immediate relief. Strophanthin, gr. 1-134, every four hours, often controls the pulse. Aconitine and veratrine must be given with great caution and only where distinctly indicated, *temporarily*.

CHAPTER XI

THE ACUTE INFECTIOUS DISEASES

Here, perhaps, as nowhere else, have modern, positive therapeutic methods won superimposed laurels. The physician who appreciates the importance of cleaning out and keeping clean the primæ viæ, of meeting *conditions* present with small repeated doses of the indicated remedy, of supporting vitality while combating pathological processes and exhibiting only positively and evenly efficacious medicines to effect—remedial or physiological—finds himself today aborting infections, cutting short disease-processes, and master of the situation generally. The death-rate is reduced phenomenally, suffering is avoided, and sequelæ have ceased to cause constant anxiety.

The rational therapeutist before prescribing a medicine, will take time to think out first just what conditions are present in the body of the person he is about to treat and secondly, the exact influence the drug or combination of drugs is going to exert upon the fluids and tissues of that body and the different vital processes proceeding in and through them.

For instance, he will see at a glance the insufficient nerve-force which limits the capacity of the blood for withdrawing carbon from the economy and exchanging it in the lobules of the lung for oxygen which, again distributed, enables the cell to appropriate other necessary food. He will really and truly understand the marvelously simple, though intricate, chemistry of the normal body, and understanding this, will easily recognize the particular derange-

ment as evidenced by the symptoms presenting. To him much that is now dark will be clear as daylight; and instead of treating certain groups of symptoms by routine measures, regardless of individual peculiarities and because in the past a certain percentage of people so afflicted have benefited thereby, he will treat the exact conditions present —the patient himself, not a named disease. Science will enable him to do this—indeed science has already offered the practician certain great truths, which he who wishes may learn and profit by; but, unfortunately, the average practician wears two clogs, precedent and routine, and he would rather walk easily along well-beaten paths than climb over the hills to success.

He who is not so hampered and regards a cured patient as the highest attainment, a pathological process cut short as something to be desired, will begin at the beginning and find out why the patient is ill, what caused the departure from the normal and the exact nature of the derangement which exists. He will not merely recognize certain signs and diagnose, let us say "scarlet-fever," prescribing therefor some treatment laid down by a writer of textbooks, but will realize that under normal conditions the invading force would have failed to gain a foothold and will seek for the weak place—the gap in the vital wall. Nine times out of ten he will find either debility (from innutrition) or a system paralyzed to a greater or less extent by retention of its own waste. In the latter case he has a dual foe to fight; in the former, an unsatisfactory battlefield; and if he would destroy the disease without annihilating the patient he will give his immediate and principal attention to supporting vitality.

If it is evident that pathogenic bacteria have gained access to the system he will take steps to render the patient an unsatisfactory medium for germ propagation while neutralizing the effect of the toxins already active. He

will realize that in order to carry reparative supplies and medicines to the various parts of the body he must have a clean intestinal tract, in good condition for absorption, and an equalized circulation; his trained eye will note the signs of distress wrung from overworked organs, and he will seek an ally in an hitherto inactive skin, thus relieving renal strain before structural damage is accomplished. In every way he will work with nature—assisting her here, coaxing her to do her work there, and boldly doing that which she can not longer accomplish somewhere else. He will understand how far we have strayed from natural conditions, and, being a real doctor in fact, will meet things as they are, not attempting to deal with that which should be, but which more often is not.

Nowhere has the positive therapeutist a better opportunity to prove the efficacy of his remedial measures than in the exanthemata: scarlet-fever, measles, varicella, roetheln (and variola for that matter) form a limited and distinct group.

The toxin in each disease originates within the body of the patient. What it is we do not know; why, under proper conditions, it becomes virulent we cannot say; neither can we yet tell why certain systems are especially liable to be affected by it, while others seem to be entirely immune. Each disease is infectious—contagious, properly—being easily conveyed from individual to individual *via* the air. Nearly every human being is likely to contract smallpox or measles if exposed to infection, while some people can come in direct contact with scarlatina patients or children with chickenpox without being in any way affected. Roetheln is now recognized as a distinct disease and is becoming more prevalent in this country.

Each disease in the group has certain well-understood and defined prodromal symptoms and is marked by a distinctive dermal eruption. It is still a question whether a

ferment is formed in the system of the patient, or whether a specific germ is responsible for it. In scarlet-fever streptococci have been found in the secretions and scales shed by the patient, but cocci in variety are usually to be discovered wherever there is lowered resistance—for that matter they, like the poor, are always with us! The exact *cause* of each disease, then, has yet to be discovered; the positive remedy for every condition encountered is already to hand and is here described.

SCARLATINA

This disease, though extremely contagious, is less so than measles. It affects nearly all children, one attack usually protecting from another. It is probable that certain systemic conditions must exist before the disease becomes evident, as many people have passed through contagion after contagion to succumb at last, late in life, to the infection. Second and even third attacks have been recorded. Infants in arms usually escape, children from two to fifteen forming the majority of cases. Sporadic cases (endemic) are not usually as severe as those encountered during an epidemic, the virulence of the disease seeming to increase by constant transmission. Exceptions to this rule however are frequent. Some of the fatal cases have sprung up suddenly, no source of contagion being discoverable and no subsequent infection occurring. It is impossible to give a description of the disease which would fit all cases, though a certain general course may be safely looked for.

The varieties of scarlatina are, practically: simple, severe and malignant. In typical cases we have the characteristic rash and angina—varying in intensity from a slight flushing and swelling of the tonsils and fauces to the so-called scarlatinal diphtheria—but there may be angina without any rash observable, these cases proving as infectious as any.

The stage of invasion may be said to be from three to twelve days, nine cases out of twelve developing within five days after exposure. The prodromal symptoms in nearly all cases are malaise, sore throat (this may take the form of a well-marked tonsillitis), anorexia, nausea or vomiting, chill and fever. The tongue, early, is almost invariably coated and the breath is foul. The child may seem merely a little indisposed till suddenly a rigor appears which is followed by a high fever. On the other hand, the little patient, at first quiet, complains bitterly of headache and pain in the throat. He refuses to eat and, within twenty-four hours, becomes a really sick child. The pulse is rapid and thready, the temperature ranges from 101° to 103°F., and the child is either stupid or extremely irritable.

Within the next twenty-four hours the rash makes its appearance and the temperature may now stand at 105° or even 106°F. The rash becomes more general, the temperature ranging each twenty-four hours from 102° to 105°F., the patient showing signs of profound sepsis.

The glands in the neck (and elsewhere) may be enlarged and the angina is pronounced in all save the mildest cases.

The urine is small in amount, the bowels are constipated, and extreme thirst is evident. Albuminuria is generally present, and even blood and casts may exist in the urine. It should be remembered that the septic process seems sometimes to center in the kidneys; again, the lymphatics seem to bear the brunt.

The rash in scarlatina is characteristic and yet varies greatly in different cases. It can best be described as resembling ground red pepper scattered over the skin; usually the upper chest is first affected, then the lower chest, and then the abdomen, sides and back.

Now the face and neck show a punctate rash, the temples usually being earliest invaded, the area behind the ears and under the chin following. The eruption may have become

confluent upon the covered parts of the body while the face still presents the punctate form. White areas appear about the mouth and nose and the cheeks blaze. Strangely enough, the rash invariably is confluent here. Even in the mildest cases the characteristic punctate eruption may be noted on chest, neck or temples and the typical whiteness about mouth and alæ nasi is almost diagnostic. The eruption spreads downward, involving the arms, hands, legs and feet; at first it is punctate, later confluent. If any difficulty occurs in making a diagnosis, strip the patient and these peculiarities will be noted if the disease has not advanced too far. At the height of the eruption the fever reaches its maximum and the subsidence is fairly even.

The appearance of the tongue is typical, even in ordinarily severe cases, being heavily furred early with red border and tip. Later the papillæ become prominent and cause the well-known "strawberry tongue" of the text-books. The buccal mucosa presents nothing peculiar. Sometimes, late in the disease, red patches may appear but this is not constant; stomatitis is met with in a few cases.

The rash persists from forty-eight hours to seven days. It rarely lasts beyond the fifth day, when desquamation usually begins. At this time the patient is especially dangerous to others and should be kept well anointed with some antiseptic oil—lard, vaseline or even bacon-fat will do. The period of desquamation is not clearly defined but the patient should be isolated for at least six weeks—or till every particle of skin has been shed.

It is not my purpose to describe here the various complications and sequelæ of scarlatina. Under modern treatment none (or few) of these should develop. The terrible ear, eye and other affections which attend or follow the disease are invariably due to local action of the virulent toxin present, and if proper measures are instituted early the disease becomes very much less appalling than it is

usually considered to be. Ordinary cases marked by a simple angina, fever and typical eruption require just as much care as any; for, as a rule, the "simple" cases are the ones which under improper treatment develop into the fatal ones. The more severe the onset, the more distinctive the symptoms, the more positive the indications for treatment.

Distinction Between Measles and Scarlatina. — The physician should bear in mind that measles is ushered in with a coryza; vomiting is unusual in the latter disease but common in scarlet-fever. Koplik's sign — macules upon the buccal mucosa — exists in measles but not in scarlatina; and the tongue in scarlatina is characteristic. The rash appears in scarlet-fever on the first or second day; in measles on the third or fourth and, in the latter disease, the face is first invaded by small red papules. The scarlet-fever "flush" cannot be mistaken once it has been seen; and the smell of measles will never be forgotten. An initial sore throat, strawberry tongue, high fever, a quick, thready pulse, and prompt appearance of a punctate rash, usually within twenty-four hours of the beginning of illness, mean scarlet-fever.

The *prognosis* is good but should always be guarded, not because we are not sure of our treatment of the disease but because people will not always do what they are told to do. In instances, where we are called in late, results cannot be so definitely promised, though prompt elimination, thorough intestinal and systemic antiseptic measures, with support of the normal resistant and vital forces, will, even then, accomplish more than any other method can offer.

Anginoid scarlet-fever is often confounded with diphtheria; the two diseases being supposed to exist conjointly.

That such a double infection can occur is undoubted, and in every case a culture should be made at the first opportunity; but in most cases we have the scarlet-fever toxin

alone to deal with, the membrane being of the "false" variety. Prostration, however, is profound in all such cases; death even resulting within a few days from either the intense sepsis, sheer exhaustion, hemorrhage from ulcerated vessel or aspiration pneumonia. The writer has never seen a case develop under the treatment here outlined and does not hesitate to assert that such pronounced evidences of toxemia could not possibly present, were suitable therapeutic measures instituted early.

Treatment.—The foul tongue, disturbed pulse and nausea, with headache and general malaise, would alone point decisively to retention in the system of undesirable material; and the chill and fever tell us very plainly that the body-forces are resisting invasion, it may be by bacteria from without or noxious ferments from within. To try to reduce hyperpyrexia by depressing the heart, or to throw into an already disordered system drugs which would further upset matters would surely be absurd! The indications are plain; why not follow them? Of all the much-abused and misunderstood drugs, calomel is perhaps the most so, and at the same time is one of the most useful. In very small doses, combined with podophyllin and bilein, it stimulates hepatic activity, increases all intestinal secretions and insures a thorough evacuation of the bowel: Grain 1-10 to 1-6 of calomel; gr. 1-67 to gr. 1-12 of podophyllotoxin, with gr. 1-12 of bilein added to every other dose, should be exhibited every half-hour till six doses have been taken; and every hour there is added gr. 1-3 of calcium sulphide —the greatest of all systemic antiseptics (and a very useful reconstructant because calcium is invariably needed for cell-repair). Two hours after the last dose of calomel, podophyllin and bilein, a full draught of an effervescent preparation of magnesium sulphate is given to flush the intestine, to soothe the irritated mucosa, and to act, moreover, as a diuretic. By this time sulphureted hydrogen will be

present in some quantity in a fairly clean and empty intestinal tract, and fermentation and spore-growth will be inhibited.

After two or three stools have been passed (within six hours of beginning treatment) give a copious high enema of salt water at 100°F. Allow part of this to be retained and note the action upon the kidneys. This step alone will often save renal complications.

The patient is now carefully stripped, piece by piece, and in a warm room is bathed with either a solution of magnesium sulphate (one ounce to the pint of water) or sodium chloride. Five minims of creolin is added to each pint. The mouth, throat and nares are cleansed with an alkaline antiseptic solution. Glycothymoline or the menthol compound tablet (one, to twelve ounces of water), are excellent. Now we have a patient clean and actively excreting as to skin, devoid of effete matter internally, already saturated with sulphureted hydrogen, and with active liver and kidneys. If the temperature is taken at this time it will probably be two degrees lower than it was when treatment was begun, but nature requires further aid before the specific toxin can be neutralized.

We continue the calcium sulphide, gr. 1-6 hourly, and give in addition, nuclein, to stimulate phagocytosis and for its marked vito-incitant properties generally. At this stage large doses are best—twenty drops (ten hypodermatically) twice or even three times daily. Aconitine, gr. 1-134 (or smaller doses if the patient is under five), should be exhibited every two or three hours to relieve congestion, to relax the capillaries (by lessening vasomotor spasm) and equalize the circulation. If we add digitalin, gr. 1-67, to every other dose we shall get enhanced action and the desirable effect of the latter drug upon the heart and large vessels. The use of veratrine in place of aconitine will suggest itself if the skin is intensely dry and the pulse full and

hard. The full physiologic action of each drug cannot be given here for lack of space, but it must not be forgotten that veratrine, like quinine, exerts an inhibitive action upon certain protoplasms; the lymphatics, under its exhibition, are rendered untenable for microbes, and clinical experience tends to prove that this drug markedly antagonizes the scarlatina toxin.

Under this treatment, within twenty-four hours we shall find the patient in about this condition: Pulse quick, but soft and regular; skin moist, tongue reasonably clean; temperature from 101° to 102°F. If we give the patient plenty of barley water (cool but not cold), flavored with a little lemon or orange juice, diuresis will be profuse, and if every four hours we give a small dose of effervescent sulphate of magnesium in solution, the bowel will move twice at least daily. Somewhere within thirty-six hours the rash will appear; there will be little or no sore throat, and if during the eruptive period we keep the skin bathed with the warm antiseptic solution we have mentioned, the whole train of symptoms will fade away within six days.

And now comes the tedious part—and the most dangerous, in a way. The moment the temperature sinks to 100°F., and desquamation commences, infinite care must be taken. The child feels well and wants to go free, but never was he so dangerous. From head to foot the body must be anointed with some bland, antiseptic material; oil of eucalyptus, one part; olive oil, three parts, is excellent. Even the hair should be well rubbed with this preparation and a cap should be worn. Every night at least, or oftener, the body should be bathed with hot water and a good antiseptic soap (carbenzol soap is one of the best) then rubbed with the oil and the child put into a cotton union night-suit. All clothing removed should be placed in a 1 : 10,000 bichloride solution and the door leading to the chamber should be covered with a double sheet kept wet with the

same fluid. There are of course many other excellent antiseptics upon the market, such as formalin and Platt's chlorides.

Finally, when desquamation is complete, the patient should take a hot bath in a 1 : 10,000 bichloride solution, be enveloped in a sheet wrung out of the same solution and carried into another chamber where he may don clean clothes and be out among the folks. The chamber and contents are then fumigated in the usual manner—preferably with formalin gas.

Sufficient stress cannot be laid upon the necessity for the free and constant use of intestinal antiseptics throughout the entire course of the disease. Unfortunately, nearly all the effective intestinal antiseptics are prone to cause nausea or gastric irritability; iodine, creosote, resorcin, eucalyptol, and other drugs of proved utility are ordinarily useless in the acute diseases of children. The sulphocarbolates, however, are safe, efficient and non-irritative in the great majority of cases. In the first days of the disease we must rely upon the combined salts of sodium, calcium and zinc, the three being combined in proper proportions in the well-known intestinal-antiseptic tablet. Later, when the intestine is empty and comparatively free from microorganisms, we may use either sodium or calcium sulphocarbolate in doses of gr. 1-4 three or four times daily, being guided entirely by the state of the bowels. If diarrhea exists we can either return to the triple sulphocarbolates or exhibit zinc sulphocarbolate alone.

Sodium is preferable when hyperacidity and flatulence present. I have also used it with satisfaction when renal complications exist. Calcium is a necessity to the living cell and this salt being almost entirely lacking in the food allowed the sick child, we shall naturally select calcium sulphocarbolate when everything progresses satisfactorily and the maintenance of intestinal cleanliness is alone to be

considered. The zinc salt is by far the most astringent and irritating and it will often be found desirable to stop its use *pro tem.*, giving the calcium and sodium salts alone. If at any time, however, *marked* symptoms of intestinal infection recur, the indication for the use of the triple sulphocarbolates in full doses is imperative. Many physicians err in dropping this medication too early; some one of the three salts should be given until convalescence is well established. One grain an hour after each meal will usually prove sufficient.

It would be impracticable to give here the treatment necessary for the various complications which may arise. Uremia must especially be watched for and guarded against; any diminution in the urine should cause the physician to act promptly. Digitonin, small doses of glonoin (and always veratrine), the hot-pack and copious saline enemata will usually be efficient. Cactin and brucine may be required to support the heart and in pronounced cases apocynin may turn the tide. The old familiar Basham's mixture is decidedly useful in "threatening" cases. But as has been stated, none of these untoward complications should arise under proper treatment.

Diet is important. Milk and lime-water, well-cooked cereal foods, and fruit juices with beaten egg-yolk and beef juice, may be generally given. For forty-eight hours little or nothing is desired or desirable. Zwieback is always safe, and later stale whole-wheat or graham gems or crackers are allowable. Clam, beef and mutton broths usually agree and buttermilk is, as a rule, eagerly taken. After the fever falls and reparative processes are set up, nutritious but easily digested foods every three hours are in order.

Constipation is quite likely to prove troublesome; a draught of hot water, with or without the addition of magnesium sulphate, should be taken before breakfast and, at least twice weekly, the lower bowel should be flushed

with a warm salt solution. The daily sponge-bath followed by vigorous friction with a rough towel is also of service.

Bitter tonics—hydrastin, quassin, juglandin—as also the arsenates with nuclein, and a mild glandular stimulant, such as xanthoxylin or iridin, should be given in medium doses three times a day to insure normal metabolic conditions. Calcium lactophosphate should be exhibited for some weeks to improve nutrition.

MEASLES

Measles (rubeola, morbilli) is without question the most common of all the eruptive fevers, few children escaping the disease. It is, from the first, extremely contagious, and while not often dangerous in itself, frequently prepares the way for more serious disorders. Otitis is especially to be guarded against, and laryngitis and bronchopneumonia frequently complicate matters. The absolute necessity for constant and minute attention to the toilet of the nose, mouth and throat will be apparent.

A microorganism, not yet identified, is supposed to be the primal cause of the disease; the infection is air-borne, children frequently contracting the disease from occupying the same room at school or even passing the house of an infected individual. The germ has not the resistant power possessed by the microorganism of scarlatina, free exposure of clothing to air and sunlight seemingly effecting its destruction; it is always wise, however, thoroughly to disinfect, after a case of measles, all clothing and the premises probably infected. In very rare cases the disease has been conveyed by a third person—the parent, doctor or nurse—but as a rule direct contact is necessary. The prodromal symptoms are often slight and the patient developing measles—infectious even at this early stage—plays with other children or attends school till the appearance of the rash attracts attention.

The fact that very young children, nursing infants especially, do not readily contract measles is proven beyond question, yet the exceptions are many, the writer having seen an entire family, from grandmother to nursing infant, contract measles from a 10-year-old girl.

Incubation.—The incubative period is from ten to fourteen days, the disease usually appearing within ten days after exposure.

Symptoms.—The first are usually a marked coryza with some headache and sore throat; the cough is often troublesome, being frequent and violent, occasionally provoking vomiting. Upon examination the tonsils and fauces will be found congested and, if a careful survey of the hard palate and buccal mucosa is made, minute red spots may be noted upon the roof of the mouth, while minute, bluish-white macules (Koplik's spots) appear upon the mucous lining of the cheeks. These become more apparent, often, if the mouth is kept open for a minute and slight tension is made upon the cheek by pressure with the finger tip, hooked within the corner of the mouth.

The child may complain of backache, lack of appetite and smarting of the eyes; in many cases the light proves disagreeable and the little patient seeks the dark corners. Listlessness is general in younger children. There may or may not be some elevation of temperature, though I have frequently noted a rise of half a degree the day before the spots were discoverable upon the buccal mucosa. It might be observed here that it is always well to examine suspected cases twice daily, and with artificial light, as the macules of Koplik (which are usually to be seen opposite the molars) are not always easily seen, although they are present in nearly every well-marked case of measles. Their value in making an early and positive diagnosis cannot be overestimated since they appear in none of the other eruptive fevers.

Once the rash appears upon the face (usually three to four days later) they fade entirely away. This should be remembered, as physicians have given a negative diagnosis because Koplik's spots were not to be found, though the typical eruption of measles existed on the body. Quite frequently the doctor does not see the patient till the rash has developed and fever is marked, but in every case of coryza with cough and malaise we should examine the mouth carefully.

The rash appears first upon the face—usually about the ears, mouth and nose and may be looked for on the third or fourth day after the coryza has set in. In some cases the eruption is thickest about the hair on the neck and resembles nothing so much as a number of flea-bites. Hour by hour the eruption spreads until the entire face is patched with small, dark-red macules. In places the skin is unaffected, in others the spots coalesce. Some swelling may occur, the eyes especially becoming puffed, and crusts may form about the nasal openings. In severe cases the features become unrecognizable. Within two days the rash is fully "out" and may become papular. As a rule, about the second day the eruption spreads to the chest, back and arms and, last of all, the trunk and extremities suffer. It is not uncommon to see cases without any eruption below the knees, but it is a rule for the rash to fade from the face about the time that spots appear upon the lower limbs.

Desquamation begins immediately after the eruption disappears, beginning naturally upon the face and following downwards. The skin is shed in fine bran-like particles and the child becomes less dangerous as the desquamation proceeds. In three weeks from the time of attack the danger of contagion is, as a rule, over. In mild cases desquamation is slight; here the eruption has been marked and there has been considerable fever. The process lasts from eight days to two weeks—the latter period being a safe limit.

The temperature usually is at its highest during the appearance of the rash; it reaches this point, in typical cases, about the second day—when the face is covered with macules; 104° to 105°F. is not uncommon, though under modern treatment, instituted early, it rarely exceeds 102°F. At this period discomfort is likely to be extreme; the skin itches and burns, the eyes and nose run profusely, the tongue is coated and the cough frequent and severe. The conjunctivæ are injected and muco-pus may exude and fasten the eyelids together. This never occurs if proper treatment is instituted.

The tongue of measles somewhat resembles that of scarlet-fever but the papillæ are not as prominent and the edges have not the characteristic redness. In cases seen at this time constipation is the rule; but diarrhea may be present and this symptom calls for prompt remedial measures—ileocolitis being always possible. There is more or less difficulty in deglutition, the tonsils and fauces being swollen. The glands (submaxillary and postcervical) may be swollen, indeed usually are. Under proper treatment the rash declines about the third or fourth day, and as it fades, the fever falls, the cough lessens and the patient feels better generally. By the time desquamation has well set in the trouble in uncomplicated cases is to keep the patient in bed.

Atypical Cases.—Occasionally the attack is sudden, high fever coming on within a few hours and the child showing every sign of profound toxemia. Here the rash may appear almost with the fever and in less than a day cover the entire body. In exceptional cases it may be hemorrhagic—"black measles." It is a question whether, after all, this is not a mixed infection: I have noticed that such cases convey a similar contagion in nearly every instance. In such patients the temperature runs high and exhaustion soon follows. While not necessarily fatal the prognosis is bad.

In some severe cases the rash is very scanty and appears late, but every other symptom is accentuated. Again, the spots may be few and faint, scarcely invading the body at all; the fever is moderate and the child scarcely complains. If allowed to run loose, however, severe symptoms may develop. A patient who has measles must always be kept in bed till the disease has run its course. In rare instances the rash disappears, severe prostration ensues, and later the eruption redevelops with increased severity. Mild cases are not always to be easily distinguished from rubella, but the typical smell of the measles-patient will never be mistaken.

Prognosis.—In ordinary cases excellent; in cases complicated by bronchopneumonia or ileocolitis should be guarded. The necessity for careful attention to eyes and ears must be impressed upon the nurse.

Differential Diagnosis.—*Rubella* is so closely allied to measles that it is frequently confounded with the latter disease. Koplik's spots (the bluish-white macules upon the buccal mucosa) are, however, never present in rubella. The fever is slight, coryza hardly noticeable—if present at all—and the rash is usually the first thing to attract attention. However, there may be some malaise, vomiting or headache. Occasionally severe systemic disturbances occur. The disease is contagious, having an incubative period of two to three weeks. Measles and scarlet-fever do not protect against rubella and the whole trio may occur in the one person within a year. The rash tells the story. Appearing first (as a rule) upon the face, it covers within a few hours the chest and body; the spots generally are pale-red in color and often pinhead in size, sometimes even resembling those of scarlet-fever. Discrete maculopapules may however be found about the wrist or forehead in nearly all cases. The whole eruption may fade in one day or last two and the fever rarely exceeds 101°F. Glandular swelling is

common but also transient, and desquamation is often absent, though it is best to have the patient take a series of antiseptic baths. The disease is of little importance and the main thing is to treat symptoms—clean out and keep clean the mouth, nose, intestine and skin, and prevent others from contracting the disorder. Many a case of rubella has been termed "rubeola" and the physician has gloried in the prompt manner in which he vanquished the disease.

In *scarlet-fever* the invasion is abrupt and symptoms severe. Koplik's spots are lacking and coryza is absent. The temperature runs up to 104° or 105°F., without any sign of eruption save perhaps a congestion of fauces and tonsils, while "red-pepper" spots may be noted on the roof of the mouth. Headache is marked, sore throat distressing, and prostration profound even early. The rash appears first upon neck or chest, rarely about groins, axillæ or buttocks. There are no macules, the skin assuming a red tint. About the mouth and nose white areas will be noted. There can be no possible misconception of the condition, once eruption occurs. Sore throat, without cough and coryza, the "strawberry tongue," vomiting, prostration, severe headache and pain in back with high temperature usually mean scarlatina. In from twelve to thirty-six hours the eruption will decide the diagnosis.

Treatment.—Most writers assert that measles is a self-limited disease and that treatment is useless. We beg to differ. All germ-diseases are "self-limited" if left to themselves, but the doctor is supposed to be able to check their progress. In measles he can undoubtedly do this. He can, moreover, see to it that complications are prevented and serious sequelæ avoided. Measles, accompanied by pneumonia, proves extremely fatal—but pneumonia should not be allowed to occur. Otitis, as a complication, causes many cases of deafness; otitis need not develop. The catarrhal angina which always exists requires attention,

most certainly, and the microorganism may just as well be destroyed as left to do harikari when satisfied he can do no more damage!

The best way to treat measles is to begin early and saturat the patient with calcium sulphide, at the same time exhibiting small doses of quinine (the arsenate or hydroferrocyanide) and nuclein. In order to secure normal intestinal conditions it is well to exhibit blue mass and soda, gr. 1 (or calomel, gr. 1-10 to 1-6 according to age) every hour for four doses, adding gr. 1-12 of podophyllin to each dose. One hour after the last dose a saline laxative draught is given and after the bowels have moved freely a warm enema of saline solution or, better still, a mild alkaline antiseptic. The child of course is placed in bed, and mouth, nostrils and fauces are rinsed, sprayed or gargled with a mentholated alkaline antiseptic. The ears are carefully syringed with a warm boric-acid solution, and then two minims of campho-menthol in petrolatum are dropped into the canal.

The child is stripped, piece by piece, and sponged with a solution of magnesium sulphate, carbolated, at body temperature.

The solution is made as follows: In a quart of water, which has just boiled, two ounces of magnesium sulphate is placed; the salt is thoroughly dissolved by stirring, and then ten minims of carbolic acid is added. The addition of 20 grains of tartaric acid is desirable and markedly enhances the cooling, soothing effect of the solution upon the skin.

This lotion should be used twice daily throughout the course of all the eruptive fevers; it lessens irritation, prevents infection, keeps the pores open and active, and generally soothes and quiets the patient. Care should be taken to sponge only a part of the body at a time, and to *keep the solution just a degree or two below the body temperature.*

Nuclein, 4 to 6 drops, should be given three times a day, and calcium sulphide, gr. 1-6, every hour for forty-eight hours, then every two. Till the rash is pronounced, quinine arsenate, gr. 1-67, may be exhibited every three or four hours, making way as the fever rises and rash appears for a solution of gelseminine (or aconitine) and echinacea. The dosage of gelseminine or aconitine varies, but enough should be given to keep the temperature below 102°F. If, however, the bowel has been emptied and the skin kept clean, the calcium sulphide and nuclein will prevent hyperpyrexia. In fact, fever under this treatment is so slight as to be of no moment.

In the room upon a small lamp a tin containing boiling water should be placed and eucalyptol and oil of turpentine, twenty drops of each, should be dropped into it every four hours. The medicated steam serves to control bronchial symptoms. The enema is repeated each day for the first four days, when, usually, all symptoms have ceased.

If cough is at all severe a few doses of calx iodata will control it. Diarrhea will yield to the sulphocarbolates, 2 grains every three hours, added to the above measures.

Occasionally renal action is deficient, even the daily saline laxative (which should *always* be given) failing to promote a free flow of urine. Barley water should then be taken *ad libitum*, with gr. 1-3 barosmin every three hours. Excessive urination with signs of renal irritation will call for arbutin, gr. 1-3 to 1, at equal intervals.

Otitis yields promptly to heat and instillations of europhen-aristol in petrolatum.

The diet should be light: barley water, gruels, fruit juices, custard and light broths, with stale bread, zwieback and crackers being ample at first. Later a mixed, easily digested diet may be given. Tonics are essential, the arsenates of iron, quinine and strychnine being the best for general use.

Special indications must be met as they arise. The more pronounced the infection the more need for the systemic antiseptics (calcium sulphide, nuclein and echinacea) and the more essential the enema, saline laxative draught and sponge-bath. In some few cases intestinal antiseptics are demanded; here again the sulphocarbolates will be found invaluable. If constipation exists, the calcium and sodium salts should be given, zinc proving too astringent.

VARICELLA

Varicella (chicken-pox) is an extremely infectious disease which affects children under fourteen usually, though adults may contract it. The specific germ has not yet been isolated. Contagion is spread by fomites, contact not being necessary. One attack renders the patient immune.

The period of *incubation* is usually two weeks, though the eruption has been seen ten days after exposure and has been delayed for twenty-one days.

The disease presents in various forms. Prodromata may be entirely absent, though careful inquiry will usually develop the fact that the child has been constipated, peevish and inclined to neglect its food. Headache, malaise, chills and slight fever may usher in the eruption, though in many cases the typical spots are the first thing to attract attention. These usually appear upon the trunk, being scattered over chest, abdomen and back.

At first the papule is small, slightly elevated and surrounded by an erythematous ring; at this time the fever usually reaches 101° to 102°F. During the second day the first spots become vesicular, each looking like a minute cantharidal blister upon a pimple. In a day or so this vesicle sinks in the center and a typical umbilicated pock presents. In another day or two this dries, and a brownish crust separates, leaving a whitened area beneath. During this time other crops of papules have appeared so that on

the one patient we can find the new papule, the full vesicle, the umbilicated variety and dry crusts, with here and there white spots showing recent separation of scab. On the face or other exposed areas infection of the vesicle is likely to occur, a pustule resulting; these may prove slow to heal and leave typical white depressions which closely resemble the "pit" of variola. A fatal variety of the disease is known —*varicella gangrenosa*—but fortunately it is extremely rare.

The *diagnosis* is easily made from the successive crops of papules, the course of the lesions and absence of systemic disturbances. The hands and feet are rarely affected; the face usually escapes lightly.

Erysipelas is a possible complication, and quite often there is a more or less obstinate adenitis. Nephritis not infrequently has its origin in an attack of varicella improperly treated. The laity have a habit of greasing the skin, which serves to confine the toxins and limit excretion of effete matter. The physician should impress upon his clientele the necessity for elimination and proper care in this as in all other germ invasions.

Treatment.—This is simple enough, but "the right thing" here as elsewhere speedily mitigates the entire process. The bowels should be thoroughly evacuated with fractional doses of calomel and iridin, gr. 1-6 each hourly for six doses being usually sufficient. This medication may well be given in the evening and the next morning a effervescent saline laxative (magnesium sulphate) draught should be exhibited the first thing. Every other night the calomel and iridin should be repeated and the saline exhibited daily.

Calcium sulphide and arsenic sulphide are the two main remedies; the administration of gr. 1-3 of calcium sulphide every two hours and gr. 1-67 of arsenic sulphide after each meal checking the disease within four days. The

papules cease to appear, the few vesicles shrink and rapidly dry up and normal conditions are reestablished.

If the skin is well sponged with a solution of sodium chloride to which a little cinnamon water has been added (or even a weak carbolized solution), the irritation will subside and infection is less probable. Vesicles upon the face should be opened with a fine needle and covered with aristol collodion. Infected vesicles should be cleansed with peroxide of hydrogen and touched with pure oil of turpentine or dusted with aristol or europhen. Thuja (aqueous extract) applied to the vesicles promptly dries them up.

In strumous, ill-fed children free elimination must be maintained and the triple arsenates, with stillingin and echinacea, exhibited for some days. In one series of cases treated by the writer, after thorough elimination was secured, ichthyol was given, gr. 1 every three hours, and the entire body bathed with a solution of ichthyol, one dram, glycerin, one ounce, water, one pint. In five days there was not a sign of varicella to be seen in four out of the five cases, the latter having only two infected vesicles upon the face.

It may be well to call attention here to the fact that occasionally a severe type of varicella becomes practically epidemic in certain localities, and physicians have from time to time reported such cases as being a mild form of variola. "Cuban itch," "miner's pock," and various other terms, have been used to describe indiscriminately cases of true smallpox and a severe type of varicella. There is no basal induration in varicella, the typical "shotty" feel never being present; moreover, in chicken-pox the mucous surfaces are not affected and the *mature* vesicle is flat and finally presents a brownish scab. Umbilication is not pronounced in any case of varicella and transient always. Pustules only present when infection of the contents of vesicle occurs. There is no odor in varicella; in variola it is distinctive.

There has unquestionably been occurring for some five years past a peculiar eruptive disease which is neither variola nor varicella of the usual type, and physicians treating these cases should carefully note the symptoms and clinical phenomena presenting, reporting these for comparison. The very unsatisfactory terms describing this "bastard" disease fail to convey a true idea of its character. The fact that some doctors report patients as suffering from second and third attacks proves the disorder to be peculiar. Variola does not protect against varicella, and *vice versa*, but the former disease rarely occurs in the same patient twice and the latter never.

PAROTITIS (MUMPS)

Parotitis, or mumps, is a contagious disease which often appears in epidemic form, the severity of the symptoms varying greatly; in some cases there is practically nothing unusual observable except moderate swelling of the parotid and the surrounding cellular tissue, while in another "run of cases" the general health may be markedly affected and the parotids, salivary glands and mammæ or testicles will be severely involved.

Parotitis must be regarded as an acute infection, the disease-process unquestionably beginning in the gland-ducts and thence rapidly extending to the gland itself. The specific toxin has not yet been discovered but it is probable that a microorganism invades the already catarrhal tissues, there rapidly propagating and producing the peculiar toxin which causes the distinctive symptoms.

Boys are more subject to the disease than girls, and it rarely attacks infants or adults. The writer has never seen a case of parotitis in a child under three and only once in a woman over twenty. Younger men, especially

those who have never had the disease, occasionally suffer, but practically the disorder is confined to children between the age of four and fifteen.

In cities and large towns the disease is always endemic, but in smaller towns and villages years may pass without a case appearing, then suddenly a large percentage of the children are affected, the severity of the infection sometimes lessening markedly as the disease spreads and, in other instances, increasing until the last victims find themselves obliged to go to bed and stay there, with a high fever and all the other evidences of a severe systemic invasion.

The disease is spread by direct contact. One attack usually confers immunity, though exceptions to this rule are not uncommon, the writer having seen one boy who had parotitis three times and another who had it twice in three years.

The period of *incubation* really is uncertain. Some writers give it as "fourteen to twenty-one days," others as from "seventeen to thirty" but, as a matter of fact, children have been known to develop the typical swelling three days after contact and others have developed the malady as late as the thirtieth day. In the latter case of course there *may* have been later infection. However, it may be safely stated that parotitis may appear within five days after contact with an infected child, and safety can hardly be claimed till a full month has elapsed. The typical swelling is easily recognized on the second day of the disease and total subsidence usually occurs by the sixth.

Diagnosis.—It would be difficult to mistake the disease once it has begun to develop, and as it is rare for fever or other symptoms to precede the pain and stiffness with swelling about the parotid, the practician will rarely need to differentiate. Glandular fever (which

will be considered later) may resemble mumps, to a certain extent, but the history of the case will serve as a guide.

Symptoms.—In the majority of cases the child complains of pain, heat and stiffness about the jaw and ear; observation will show that the parotid upon the affected side is swollen and the thermometer will reveal a temperature of 101°—104°F. The tongue is, as a rule, coated and the breath fetid. Deglutition is always difficult, and as the process extends the face swells, sometimes to an enormous extent, the cheek and neck being involved together. In typical cases the lobe of the ear is in about the center of the swelling. In some cases there is a profuse flow of saliva; in others the mouth and fauces are dry and thirst is constant.

Rarely the submaxillary gland is affected and in girls the mammæ and labiæ, while in boys the testicles may suffer. The latter complication is looked upon by the laity (and some physicians) as being a very serious matter, but with ordinary care no permanent harm results.

It is a strange fact that in some epidemics fully 90 percent of the boys presented orchitis, while in others the latter complication was rarely met with. I have been inclined to think that orchitis is more liable to occur when both glands are infected, especially in those cases where the second gland becomes inflamed just as the first subsides. (Usually on the fifth or sixth day.) Orchitis is very rare when one parotid alone is involved.

In the typical case there is some malaise, thirst, a dry skin and constipation, with diminution of urine. Occasionally there is a slight coryza. Unfortunately the physician rarely sees the case at all until the face is swollen to an extent which alarms the parents, or a beginning mastitis or orchitis causes uneasiness. Then the child is likely to be found with a piece of salt pork or other "home remedy" tightly applied to the swollen face,

and over this, layer after layer of flannel. It is generally believed that the mumps must be "kept warm."

Complications. — These are rare (except orchitis, mastitis, etc.), but may include convulsions, various cerebral disorders, nephritis, albuminuria, hemiplegia and meningitis. Facial paralysis has been noted several times and optic atrophy more rarely. Metastatic (secondary) parotitis must not be considered here; this condition, however, has possibly been really responsible for some of the more serious sequelæ noted. Typhoid, typhus and some other fevers, laparotomies, blood-poisoning, diphtheria, and similar systemic invasions have been complicated by metastatic parotitis; the process then usually ending in suppuration and total destruction of the glands involved. This rarely happens in mumps, never, indeed, under rational treatment.

Treatment.—Despite the textbooks this is effective and simple. The main thing is to get people to send for the doctor *early*. As in all infections, the *primæ viæ* should be promptly emptied and rendered aseptic. The kidneys require stimulation and the skin should be rendered active. Mouth, nose and ears should be cleansed twice (or oftener) daily and the latter anointed with camphorated or carbolated oil. Oil of turpentine and carbolic acid are perhaps the best local applications, but carbenzol or ichthyol also give excellent results.

Guaiacol, one part, to lanolin, three parts, will abort many cases if rubbed in thoroughly and covered with oiled silk. The writer cleanses the mouth, nares and external ears with a hot solution of boric acid or a solution of menthol compound—two tablets to the pint—and then sprays the fauces, nares and ears with an oily solution of campho-menthol. The affected area is washed with the first solution, dried and then carbolic acid (pure) is painted rapidly over the gland and adjacent

tissue; after a minute this is removed with alcohol and the parts promptly covered with oil of turpentine, one part, olive oil, six parts, or a carbolized oil, guaiacol and lanolin or ichthyol. (Carbenzol, a later product, will give equally good results.) Either of the latter should be mixed with vaseline or lanolin. The usual proportion is one to three. Do not apply *heavy* dressings.

Internally the first procedure is to exhibit either calomel and iridin, of each gr. 1-6, or blue mass and soda, gr. 1, half hourly for four to six doses. One hour after the last dose a saline is given and repeated in four hours; after this twice daily. Hourly give calcium sulphide, gr. 1-6, echinacea, gr. 1-6, and calcium sulphocarbolate, gr. 1-6. These should be given with a little water. Arsenic in some form is useful—extremely so. The writer prefers the triple arsenates (iron, quinine and strychnine), and by using the tablet with nuclein—one or two after meals—gets also the phagocytic and reconstructant action of the latter remedy. The entire body is sponged with a weak carbolized saline solution (sodium chloride, 1 dram; carbolic acid, gtt. 10; water, 1 pint), and once daily an enema of normal saline solution is given.

The toilet of the mouth is important and should be attended to every few hours. Calx iodata may well be exhibited in severe cases, and if the fever is pronounced early, a few doses of aconitine or gelseminine will give prompt relief. One other drug demands attention. In cases where the skin is very dry and the child complains of a burning, dry mouth, pilocarpine proves an ideal remedy, of which gr. 1-67 should be given every half hour till diaphoresis is marked.

In such cases the action of this drug is remedial generally, but it is distinctly contraindicated when there is a profuse secretion of saliva. In such cases phytolaccin will prove remarkably useful. The latter drug will also

be indicated when orchitis develops or when both sides of the head and submaxillary glands suffer. Bryonin and macrotin (aa. gr. 1-67 every three hours) relieve pain and stiffness promptly.

Orchitis.—This condition calls for perfect rest, support of the testicle and applications of guaiacol and lanolin after the parts have been well bathed in a hot weak carbolized solution. Anemonin may here be well alternated with phytolaccin. The ice-bag is an abomination.

Mastitis.—This requires practically the same treatment and a broad, firmly applied bandage. Ichthyol may be applied to any affected part, with confidence of results.

Diet should be light but nutritious. Barley water is especially useful. Acid drinks and acids generally are usually disagreeable to the patient during the early stages of the disease but later may be given freely. If diuretics are called for, barosmin and lithium benzoate will give the best results. A preparation of triticum repens may be added. In very small children with marked suppression one dram of spirit of nitrous ether with two ounces of water at bedtime will act nicely.

Treated in this way mumps becomes a matter of three to four days—six at most—and the disorder is never complicated by more serious affections; neither does the patient recover in a condition rendering him liable to contract any other malady which may be rampant locally.

GLANDULAR FEVER

This disease unfortunately has not been generally recognized, Pfeiffer giving the first correct description of the condition and differentiating it from parotitis and adenitis, in 1899. Recent authors have even failed to describe the disease, which is far from being uncommon in cities and large towns where the poorer working class

congregate especially. Parotitis is, probably, the diagnosis in most of the typical cases, while in those which run a longer course "adenitis" would be offered.

Glandular fever is most distinctly an infectious disease and sometimes proves epidemic, children of tender years being particularly prone to contract the malady. The writer saw a series of seven cases some time ago, the patients being under seven years of age, and all of them attendants at a private kindergarten school. Only one case ran over the fifth day and this child had a decidedly strumous tendency.

The cause of the disease is unknown but is probably a microorganism which gains access *via* the mouth and nares. In one case there was some tonsillitis, but this symptom did not present in any other patient. The child first seems unwell and feverish and may place its hands constantly to the throat and face. Within twenty-four hours there will be noted swelling of the submaxillary and cervical glands but the skin overlying the parts is rarely erythematous. The head is moved with difficulty and swallowing may be slightly or considerably painful.

On examination the fauces will appear reddened and slightly edematous and the mouth is opened with difficulty. The *parotid is not affected* to any extent, if at all. Vomiting may be present (usually is at first), and if it is not, there is likely to be diarrhea. As a rule the parents fear scarlet-fever or measles and a nice diagnosis is necessary. The temperature runs high (102°—104°F.) and the pulse is quick and hard. Sometimes there is almost entire suppression of the urine. All of the symptoms may appear and fade within three days and doubtless many of the cases of "scarlet-fever aborted" were really typical cases of glandular fever. The stools are light and older children may complain of pain in the hepatic region

or over the spleen. The appetite is not markedly affected (once vomiting has ceased) and while the patient is fretful, he prefers to be about.

In some of the cases the disease persists: the fever fluctuates, the glands remain swollen, and cough develops. Retroperitoneal involvement may occur and is evidenced by pain upon deep pressure. However, the ordinary case develops and passes away without further trouble. Under treatment it is especially ephemeral.

Treatment.—The buccal and nasal toilet should be made as has been already described, and the child promptly given a calomel purge, of which gr. 1-10 to gr. 1-6 may be exhibited every half hour till a grain is taken, podophyllin, gr. 1-12, being added to every other dose. A saline laxative should follow the last dose and calx iodata (or iodoform) and phytolaccin be given in full doses from the first. Nuclein is especially called for and gives prompt results. Ten minims may be dropped under the tongue twice daily.

Hepatic activity should be maintained by the exhibition of small doses of euonymin or juglandin; the latter drug exerts a peculiar action upon glandular structure; gr. 1-6 every three hours (subsequent to the podophyllin) has proven sufficient. Gelseminine is perhaps the best direct remedy for the hyperpyrexia. Very small repeated doses act most satisfactorily. Locally compresses wrung out of a weak carbolized solution have given the best results, though in two cases iodine ointment was rubbed in thoroughly twice daily with good effect.

As soon as the acute symptoms subside the child should be placed upon iron iodide or syrup of hydriodic acid. The arsenates would probably prove quite as efficacious but the writer has not used them here, the indications for iodine being marked. The use of quassin or hydrastin for some weeks will suggest itself and the patients should

be cautioned to keep up free elimination. Order a light nutritious diet for some time.

As soon as the disease is recognized the child should be quarantined—at least should be kept to its own room and other children should not come in contact with it. The same rule applies in parotitis.

DIPHTHERIA

Diphtheria, from time to time, has visited communities and swept away in a few days scores of the younger members. As in scarlet-fever, the virulence of the infection varies markedly; in some epidemics nearly all the children infected either die or remain more or less affected for life, while in others the mortality is light. Better sanitation and the modern methods of treatment undoubtedly have something to do with this, but unfortunately, even now the disease sometimes appears in the most favored localities in its most severe form and only rational, thorough and prompt therapeutic measures can be depended upon to save life.

Children between two and twelve seem to be particularly susceptible to infection; but no age is totally exempt. Individual resistance varies to a marked extent also, some children passing through exposure after exposure with perfect impunity while others succumb immediately.

There can be no question that the condition of the nose and throat has a great influence here; catarrhal subjects are almost always easily infected and the child with a chronically inflamed buccal mucosa or enlarged tonsils offers a particularly favorable field for the Klebs-Loeffler bacilli. Lowered vitality also predisposes, and when there is diphtheria in the neighborhood the physician should see to it that the weakly children under his care are placed in the best possible condition. Thorough elimination and a course of iron, quinine, and strychnine arsenates with cal-

cium sulphide in full doses will prove a valuable prophylactic procedure. The toilet of mouth, nose, and ears should also be carefully performed, an alkaline antiseptic solution being used freely three times daily.

The nature of the Klebs-Loeffler bacillus today is thoroughly understood; but it is not generally known that the action of the germ is distinctively local though it produces toxins which enter the blood, setting up a systemic intoxication and causing degenerative changes in various parts of the body. In some cases where colonization is strong and absorption of toxins rapid, there follows a profound involvement of the cardiac muscles and death may result suddenly; in other cases the nervous system is particularly affected, and in others again the kidneys suffer most severely. Hence it is necessary to limit germ-activity, eliminate toxic matter from the body and support (and if possible enhance) the vital resistance of the patient.

The microbe has been found in the glands, lungs and spleen. The Klebs-Loeffler bacillus may often be found (with a very similar but quite innocuous germ and a host of minor bacteria) in the nose, throat and mouth of perfectly healthy persons; moreover, the socalled "pseudodiphtheritic" bacilli are often present in ordinary cases of tonsillitis and, being mistaken for the Klebs-Loeffler microbe, non-diphtheritic patients are isolated and subjected to injections of antitoxin. In this way many of the socalled "mild cases of diphtheria" may be accounted for.

Etiology.—Diphtheria is peculiarly "an acute, contagious disease," originating we do not quite know how, but invariably caused by the presence upon mucous surfaces of the Klebs-Loeffler bacillus. Poorly drained and dark, dirty localities may be looked upon as harboring the infection, light, dryness and fresh air proving the best inhibitive measures. The germ may remain active for considerable periods and be conveyed from one place to another on

clothing, furniture or articles of food. Domestic animals have been accused of spreading the disease, but while it is possible for the cat or dog from an affected house to bear upon its body the bacilli, we can hardly look upon this as a very likely source of infection.

The writer is of the opinion that the virulence of the infection increases under certain conditions—indeed it is possible that the socalled pseudodiphtheritic bacilli may become changed in the presence of the Klebs-Loeffler bacilli and when provided with a suitable culture-medium. Thus a colony of otherwise innocuous bacteria might easily become virulent when in contact with the Klebs-Loeffler microbe and the patient supposedly suffering from tonsillitis might develop a typical and serious case of diphtheria. The early recognition of the bacillus is therefore imperative and in each suspicious case a swabbing of the throat should be made and forwarded to a reliable laboratory or local board of health for examination.

The usual mode of infection is unquestionably direct, the use of infected utensils, handkerchiefs, etc., being generally responsible for epidemics; the breath of the diphtheritic patient is not in itself infective, but the acts of coughing, sneezing and expectorating liberate millions of bacteria which may be conveyed for long distances. It is evident that all discharges should be destroyed at once and everything coming from the sick-room must be thoroughly disinfected.

The physician himself will need to use every precaution or he will become a spreader of contagion. Especially should he guard against himself receiving matter coughed up; patients having their throats treated are quite apt to throw germ-laden sputum into the face of the operator. Gloves, a linen (or better, rubber) robe and a solution of formalin (1 : 20,000) for spraying over the exposed parts of the body will prove useful. The fact that the bacilli

have lived for five months in a dry cloth must be remembered; patients should also be told that the germ may remain in the throat and nose long after the last sign of the disease has gone.

Symptoms.—Diphtheria may be pharyngeal, nasal or laryngeal. Pharyngeal diphtheria is, perhaps, the most common and the nasal form, while occasionally met with alone, is usually really an extension of this disease. Laryngeal diphtheria in many ways resembles membranous croup, and the latter disorder is quite often termed diphtheria. On the other hand, some cases of true laryngeal diphtheria are diagnosed and treated as membranous croup, with the most disastrous results.

The period of *incubation* is not definitely known but is probably four to six days; ten days would be a safe quarantine period. *Immunity* is short, one attack protecting only for a few weeks; a second infection has been noted within two months after the first.

The symptoms of pharyngeal diphtheria are those characteristic of any severe sore throat. There is more or less pain, soreness and swelling, and swallowing is difficult. There may or may not be a concurrent rise of temperature; in some cases 103°—104F. is to be found early, and again, we may have a severe case without any noticeable temperature rise at any stage. The fauces will be found red, with perhaps points of exudate studding the surface.

Follicular tonsillitis closely resembles this form of diphtheria. Soon, however, the glands in the neck swell; edema increases and the exudate spreads till the membrane—at first of a dirty-white and later grayish yellow color—covers the entire fauces, uvula and even the posterior wall of the pharynx. This membrane resembles nothing so much as a piece of wet wash-leather or chamois skin; it is extremely tenacious, its removal causing bleeding, which may be profuse.

At this stage (usually on the third or fourth day) the disease may begin to decline or the local process may extend, involving the nose, when we shall have a foul nasal discharge, obstructed breathing, and perhaps ear and eye symptoms; or, worse still, the larynx will be involved. In the latter case we have a serious condition to combat. From the larynx, the trachea and even the smaller bronchi may be invaded and respiration become seriously impeded. Moreover, as a rule the severity of the systemic conditions keeps pace with the local, though this is not by any means a constant feature. Thus, when the pharynx, larynx and trachea are involved we usually have a profound systemic toxemia, the absorption of toxins from the large surface affected being pronounced. We shall then find the breathing labored and noisy, the inspirations slow, labored and shallow; the lower ribs and sternum being strongly retracted. Cyanosis is marked, the breath is fetid, the tongue foul and, in the great majority of cases, the pulse is rapid and thready and the temperature high. Death too often is the result, the end being due either to cardiac paralysis (toxemia) or asphyxiation from the occluding membrane.

In these days such cases should never be seen. If the physician is sent for at all early the growth of diphtheritic membrane can be almost positively controlled and the systemic toxemia even more surely prevented. Occasionally, however, the disease strikes heavily and, seemingly, "all at once." The child becomes feverish and complains of sore throat at night, and even the next morning, with high fever and foul tongue, marked swelling of throat and extensive growth of membrane may be found. Convulsions or delirium may present; the bowels are obstinately constipated, and the urine scant or totally suppressed. The odor from the mouth in such cases is typical and the diagnosis of diphtheria may sometimes safely be made from it alone.

Occasionally, again, a case will pursue a seemingly mild course and on the fourth or fifth day gather virulence and invade the deeper tissues. Here we shall have extensive sloughing of the parts, profuse fetid discharges with perchance final gangrene of the affected area. Paralysis, deafness and blindness may result, even when death is averted.

Nasal Diphtheria is perhaps the least serious variety of the disease; sometimes its very presence may be overlooked. The possibility of infection here however is great, as the nasal discharges must contain a vast amount of membranous shreds and bacteria. It is well to look with suspicion upon all "coryzas" occurring during a run of diphtheria.

The complications are few but serious, paralysis, hemorrhage, bronchopneumonia, bronchitis, gangrene of the lung, and albuminuria (parenchymatous nephritis) being the most common. Paralysis may appear early or quite late and may affect merely the palate (changing the voice) or the respiratory, pharynygeal, ocular or cardiac muscles. The extremities suffer occasionally. Cardiac paralysis—which is usually marked by extremely tardy pulse and stupor—may make its appearance early or be deferred till the end of the second week, causing what otherwise appeared to be a tedious but not particularly severe case, to end fatally. A toxic neuritis may be present and various forms of paralysis result.

From the foregoing it is evident that we may have in diphtheria either a slight inflammatory condition in the nose, pharynx or larynx—or any combination of these—accompanied by more or less systemic disturbance and development of membrane; or, an intense, edematous inflammation of any portion or all of the upper respiratory tract with a marked local growth of diphtheritic membrane and a profound systemic toxemia, which may manifest itself in any of the ways mentioned.

Thrush and herpes may be mistaken for diphtheria by the inexperienced, and occasionally after excision of the tonsils the parts look "diphtheritic," but in none of these cases is there *adherent* membrane, and the general symptoms are markedly different. A culture will prove the presence or absence of the specific bacilli. However it should be remembered that the Klebs-Loeffler bacillus may exist in the throat or nose and the patient still not have diphtheria; the clinical picture and bacteriological report alone can decide in some few atypical cases.

In scarlet-fever the angina may appear diphtheritic and, again, an oncoming diphtheria may be mistaken for scarlet-fever. The appearance of tongue, temperature, and progress of throat symptoms will enable the careful observer to distinguish the two diseases in the early stages. An eruption should always be carefully looked for, as sometimes this feature appears quite late in scarlatina; moreover, the prevalence of the latter disease, the extreme prostration and high temperature, with tendency to vomit, will aid in forming a correct diagnosis.

The odor of diphtheria is distinctive and once experienced will not be forgotten or mistaken for that of any other disease.

Membranous croup cannot be mistaken for diphtheria if ordinary care is taken to examine the patient and elicit the history. There is a tendency to call laryngeal diphtheria "membranous croup" and, when membranous inflammation commences in the larynx, it is often due to the Klebs-Loeffler bacilli; however, croup with membranous formation does unquestionably present and we have here none of the systemic disturbances which are invariably present in true diphtheria. Moreover, the patients are usually younger children, "crouping" occurs suddenly at night (after, perhaps, premonitory hoarseness or coughing during the day) and the dyspnea increases as the local condi-

tion becomes worse and the child, instead of being practically well next day, is ill and examination will reveal a pseudomembrane and swollen and moderately inflamed fauces. The membrane is tenacious but not intimately adherent and an emetic will often cause it to be expelled whole or in part. There is no hemorrhage or bleeding from underlying tissue when membrane is separated. The pulse is not that of diphtheria, neither is the temperature elevated to any extent; 100° to 101°F. being the highest point reached.

During the second day all symptoms may improve, to return with increased severity the next night. A cold compress to the throat, this being covered with flannel, a full dose of apomorphine and calx iodata in frequent full doses will speedily check membranous croup, but it *will not touch diphtheria*. In such cases bronchopneumonia may set in (as in diphtheria), but this will rarely happen under proper treatment.

In membranous croup there is no swelling of the glands, neither is there albuminuria—the latter is almost constantly present in diphtheria. For further differences the reader is referred to "Croup," and "Scarlet-Fever," elsewhere.

The importance of early treatment and correct diagnosis is evident and it is perhaps safe to say that early and correct treatment is even more important than diagnosis.

Treatment.—The moment diphtheria is even suspected thorough eliminative and antiseptic measures should be instituted. If it is possible to secure a specimen from the throat or nose, do so in the approved manner—but, anyway, *treat for diphtheria.*

First, as a precautionary measure, put the child in a room devoid of hangings or useless furniture; select a chamber which is open to the sun and air and removed from the family apartments; have the room supplied with a commode and a few easily sterilized small basins and a

pitcher. These are for receiving discharges from mouth and nose, etc., and to contain antiseptic solutions and other requirements. A supply of squares of old linen and some absorbent cotton should also be provided, together with an atomizer for oils and another for aqueous solutions.

To these it is well to add a cresoline outfit or some similar simple device for charging the air with antiseptic vapor. This should be put in operation as early as possible and kept going throughout.

The use of antitoxin is recommended, but the writer believes that under the treatment to be outlined equally good results are obtained without it.

As it is often impossible to obtain reliable and fresh antitoxin, it is well to know *what* to do, and then *do* it, for in diphtheria the success obtained will depend upon the thoroughness and promptness of local and systemic treatment. It is presumed, therefore, that antitoxin is not being used, though its employment will in no way affect the medication suggested.

The patient is thoroughly bathed with a warm solution of epsom salt (one ounce to the quart of water) to which is added ten minims of creolin, and mouth, nose and ears are well sprayed, first with hydrogen peroxide, and then with the foregoing solution. All sputum and fluids ejected are received in a vessel containing a strong disinfectant, and the linen and cotton used as mops or handkerchiefs are burned.

The diphtheritic toxin is destroyed by moist heat, and we should take care to use gargles and douches as hot as can be tolerated. The writer uses either the foregoing solution (as gargle and nasal douche) or boric acid, one dram, borax, one dram, potassium chlorate, one-half dram, glycerin, two ounces, water, eight ounces. This is best applied in the form of a strong, direct spray against the affected area, always *after* a preliminary gargle (or douche)

and the application—if membrane is present—of hydrogen peroxide. Use only a first-rate preparation and apply it in its undiluted state.

Internally the first thing to give is blue mass and soda, gr. 1-2 to 1, and podophyllin, gr. 1-12 to 1-6, hourly for six doses (dose according to age) and to follow the last dose in two hours with a saline laxative draught. Every hour the child should be given echinacea, two tablets (gr. 1), and calcium sulphide, gr. 1-6. Every three hours nuclein, gtt. 6 to 8, either under the tongue or hypodermically. Give three times daily (preferably after such food as may be given) the arsenates of iron, quinine and strychnine as a general tonic. Calx iodata may be exhibited from the first; gr. 1-3, in powder, dropped on tongue, every three or four hours. Add to this any particular drug which may be indicated in the particular case under treatment. For two days the sulphocarbolates (preferably in solution) must be given (dose according to age) every four hours—5 to 10 grains usually suffice.

This is the early treatment, and it alone will often prove all-sufficient, a few doses of aconitine or gelsemin being perchance also required for any hyperpyrexia present. The cleanliness and forced activity of bowel, kidneys and skin will enable the system—aided by the nuclein exhibited—to dispose summarily of the limited amount of toxins we allow the invading bacilli to produce. If antiseptic vapor or air is inhaled constantly and the affected parts are constantly attended to, the systemic conditions cannot become very serious. Calcium sulphide and echinacea amply provide for such septic conditions as may exist.

The food must however be from the first most nutritious but fluid. Albumen water, beef juice, predigested cereal gruel, bovinine, trophinine, beaten egg-yolks, with grape juice, malted milk, etc., are to be given every three hours in sufficient quantity.

Antitoxic Serum

It may be well to consider briefly here the use of serum. The various antitoxins upon the market vary little, if any, in their efficacy, but the most important firms offer their products in ingenious syringe containers and the doctor is likely to be to some extent governed in the matter of dosage by the contents of the package used. This is a serious error, the condition of the patient and stage of disease being the only reliable indications.

The *mildest* cases require 3000 to 5000 units (the "unit" being an arbitary measure representing that quantity of serum which will protect a guinea-pig weighing from 250 to 300 grams from 100 times the usual fatal dose of diphtheria toxin), while a well-marked case will call for 7000 to 8000 units; laryngeal cases should *always* receive the latter amount. If the child is *under two* years of age, at least 5000, and probably 6000, will be called for under the above conditions. In very severe and advanced cases in patients over ten years old 10,000 units may be exhibited and the dose repeated in from six to eight hours. If we are to receive any benefit from antitoxin, me must use full doses at the earliest possible moment. A good rule is: "Advanced cases require double doses."

If an ordinary syringe is used it must be sterilized by boiling, and the needle should first be dipped in carbolic acid and then into alcohol. The instrument should hold at least 5 Cc. The skin under the shoulder-blade, over abdomen or gluteal region is cleaned *thoroughly* (when the patient is very young the back should be chosen so that the needle is not seen) and the cleansed needle entered with a quick thrust. The serum is slowly injected and, when the required amount has been inserted, the needle should be withdrawn and the finger-tip, protected with cotton soaked in an antiseptic, pressed over the orifice. The puncture should be promptly sealed with collodion and a piece of

gauze or cotton. The "syringe containers" are supposed to be sterile, but the needle should always be disinfected as above.

The action of serum is evident (when effective) as a rule within twelve hours; there is diminution of the fever, the child feels and appears better and the membrane stops spreading and begins to loosen and shrivel. Local edema (even when so severe as to seem to necessitate intubation or tracheotomy) subsides and the case comes well under control. Sometimes a third full dose is needed to produce such results. All these conditions however should be absent under alkaloidal treatment and diphtheria cases, treated as described from the beginning, rarely become alarming.

Systemic antisepsis and destruction of bacteria and toxins can be secured in more than one way, and the physician, by instituting rational therapeutic measures, obviates the necessity for injecting antitoxin, preventing, to a great extent, the production of toxins by rendering the system inimical to the growth of the bacteria. A "clinically clean" patient, saturated with calcium sulphide and possessing the ability to secrete and excrete normally, will, if given nuclein in proper doses, be perfectly able to dispose of such bacteria as are able to withstand local therapeutic measures as well as the toxins they are able to produce!

Enemata of normal saline solution are useful daily and while serving to insure a really clean bowel aid, generally, a certain amount of the fluid being absorbed into the system.

The writer has found it an excellent plan to give children tablets of papayotin to suck; this agent dissolves the membrane slowly but very positively, and when the gargle and spray are given we get a very clean throat. If the nose is affected insufflate the powdered drug; in later stages, where the membrane is troublesome, I like a solution of mercury bichloride in alcohol (one-percent); this is applied by

means of cotton on a wooden applicator, or a sponge may be used. For very small children an aqueous solution (1 : 500) will serve nicely. The stronger solution is, however, the most effective. If the nose of the child is pinched and a small block of wood or a folded handkerchief is forced between its teeth, when the mouth opens one assistant can, by placing a wide towel about the patient's body, control any struggles, and the application can be made as it should be. *Half of the victims die because they are not properly attended to.*

The efficacy of iron perchloride in diphtheria is acknowledged, but the greater part of the benefit is derived from the local action of the solution when swallowed. The arsenates will give even better constitutional effects.

The heart will require close attention in every case, and after the second day it is well to exhibit cactin, gr. 1-67 every four hours. If the arsenate of strychnine is being exhibited this drug may well be given at the same time.

Helenin is gradually being recognized as an invaluable remedial agent in diphtheria; in nasal and laryngeal cases especially it gives prompt results. It may be combined with calx iodata, gr. 1-3, four to six granules being given four times a day.

In nasal diphtheria the nares must be cleansed well with the creolin and magnesium sulphate solution, then sprayed with hydrogen peroxide and irrigated with a hot boric-acid solution, then (unless it be a very mild case) a solution of glycerite of carbolic acid, 6 drams, sodium bicarbonate, 60 grains, warm water, 8 ounces, should be sprayed into each nostril thoroughly. This solution may well be used with one of the steam atomizers on the market. It is extremely useful in laryngeal diphtheria.

The writer has had excellent results in severe nasal cases with ichthyol, 2 drams, tincture of iodine, 1-2 dram, glycerite of hydrastis, 1 dram, glycerin, 4 ounces. This

solution is applied from a coarse-spray atomizer (it may be diluted if necessary), or better, with cotton wrapped upon a slim wooden rod. Aluminum applicators are also of service here. In very septic cases I use (after cleansing the nares with H_2O_2) equal parts of thuja and echinol. The application must be repeated every 6 hours. The operator must work in a good light and be careful to reach between the turbinated bodies and well into the posterior nares. There are numberless other solutions upon the market under fanciful names, and formulæ are offered without number, but none of them will give better results than these, which meet every indication.

Serious conditions and complications should not arise and do not do so when the case is taken early and properly attended to. Brucine (or strychnine) must of course be pushed in full doses if cardiac failure threatens; camphor may also be used, or musk per enema. Digitalin is called for when renal action is poor; barosmin, gr. 1-2 to 1, may be given with gr. 1-67 of digitalin every three hours for twenty-four hours. Symptoms of paralysis and multiple neuritis cannot occur unless the system is overwhelmed with toxins, and we do not allow this to happen. Otitis and the severe sloughing occasionally seen never present under this method of treatment.

During convalescence the patient requires to be carefully watched; death has come suddenly two weeks after supposed recovery subsequent to overexertion. There is no better tonic than the three arsenates with nuclein. The prepared bovine blood-foods may well be exhibited for at least one month. Fresh air, moderate exercise, daily stool, and a full salt sponge-bath will also suggest themselves.

Throughout the disease and convalescence I make it a practice to give a morning saline laxative draught. Children can take this in the form of "lemonade;" older patients

may dissolve the saline in a little cold water, swallow it and then drink a glass of hot water. It is not usually well to give *cold* draughts in these cases early in the day. A good way to give the saline to young children is this: Dissolve two teaspoonfuls of the effervescent magnesium sulphate in half a pint or so of distilled water, add a little lemon juice, two drams of simple elixir, or a tablet of saccharin; another of carmine will make it pretty enough to tempt the most "pernicketty" child.

For infants the gr. 1-10 calomel with aromatics tablet proves ideal. Other granules may be flipped into the throat and a few swallows of water given. Barley water made thin with lemon juice added is the best possible drink during the whole attack. There will rarely be any renal complications when it is used.

In collapse caffeine dissolved in a solution of sodium benzoate may well be used, but a granule of glonoin will act faster and almost as well.

Intubation and Tracheotomy

Either or both procedures may be necessary in laryngeal diphtheria, and the writer has, from time to time, urged physicians to perfect themselves in their technic. An intubation set should be in the possession of every general practician; it should, moreover, be looked over occasionally and kept in perfect order. It is not easy to pass the tube in a struggling, perhaps moribund, child and unless the operator has become expert beforehand he will be very liable to fail.

Tracheotomy may be demanded at any moment, and the doctor should be able to do the work with a sharp knife, the rounded end of a pair of scissors, bent hairpin, and a rubber band. But cleanliness is essential—and *care*. If you *have* to do a tracheotomy and time presses, put your knife and a pair of small scissors (these should be in your pocket or case) into boiling water (with carbolic acid or

other antiseptic added, if possible) or, in dire emergency, run them through a flame, and wipe clean upon cotton soaked in alcohol or kerosene. The latter is an excellent bactericide.

Have the child held firmly in one person's arms with a towel wrapped well about the body, restraining the arms; have the neck bared, and the head bent backward so as to render the tissues over the trachea tense. Wash off the skin with hot water, dry, paint the line of incision with pure carbolic acid, neutralize with alcohol (always have a vial of each with you) and go ahead with your incision through skin and subcutaneous fat; one stroke will do it; if any veins are in the way they will now be seen and may be caught up and tied or pushed out of the way with the round-pointed scissor-blade; if you have a pair of forceps, catch the vessels on each side and cut through between them; tear through the fascia and expose the trachea; if hemorrhage is free, make pressure on each side of incision (you can do it with two fingers or any sane person present can make pressure for you), sponge up the blood and cut through two or three rings; entering the point of knife between the lowest two and cutting *upward*. As a rule bleeding will promptly cease.

Now, if you have a tube insert it, if not, use a hairpin *sterilized* previously and bent, thus: Make a *small* ring at each end, then bend back each ringed arm, half an inch or so down, flaring the bent portion outward a little; now slightly curve the long arm (double-wire), and attach a piece of elastic or a rubber band to one ring. The curved long blade is inserted into the trachea, the rubber passed round the neck and the free end fastened to the vacant ring on the opposite side; enough traction being made to keep the orifice open.

Before going to treat a diphtheria case the doctor should refresh his memory upon the subjects of tracheotomy

and intubation. There is on the market an instrument called the "bloodless tracheotome," fashioned on the trocar and canula pattern, and this is, perhaps the ideal emergency-instrument, as it can be inserted instantly and safely. Excepting in the most *desperate* cases, before doing tracheotomy or intubation, use apomorphine hypodermically and hydrogen peroxide locally—it may save you trouble and the patient much pain and distress!

ERYSIPELAS

Erysipelas (rose-fever, St. Anthony's fire, ignis sacer) is an acute infectious disease due to invasion of the system by the streptococcus erysipelatis, now deemed identical with the streptococcus pyogenes. The same germ is responsible for cellulitis, pyemia, and, possibly, puerperal fever. Just how the bacteria gain access to the lymphatics is not known, but it is probable that some trivial break in the skin or mucosa existed (and few ordinary individuals lack such a lesion) at the time of exposure.

In traumatic erysipelas the inflammatory process starts at and is limited to the parts adjacent to the wound, but in idiopathic erysipelas the face and scalp, or face alone, are nearly always affected. In childhood we find erysipelas to be one of the earliest and most deadly diseases, the variety which presents at the umbilicus of the newly born being especially fatal. Vaccination is not infrequently followed by erysipelas, though modern methods of operating and improved technic in the manufacture of virus markedly lessen the danger. In traumatic erysipelas the internal treatment recommended for idiopathic erysipelas will be called for, together with the most perfect cleanliness and strong antiseptic (germicidal) applications locally.

The disease is conveyed by contact, fomites and the air. The incubation period is from four to seven days. Perfectly healthy children (or adults) are not likely to be in-

fected. Strumous, poorly fed and unclean children, or the offspring of drunken, syphilitic or tubercular parents, are most likely to suffer.

Prognosis.—In idiopathic cases, good (under proper treatment); in traumatic (with which we do not deal here) generally guarded.

A peculiar form of the disorder, *erysipelas ambulans*, in which the inflammation appears and subsides in one part of the body only to reappear somewhere else, may destroy life by exhausting the patient's resistance. Under modern therapeutic measures, however, this form of erysipelas rarely presents.

Symptoms.—Prodromes are not usually noted; when they exist there will be some malaise, chilliness, flushing, tingling of the face, headache and restlessness. More often, however, the disorder is evidenced by a severe chill, followed shortly by fever (102°—105°F.), a splitting headache and, perhaps, pain in the back and limbs. The pulse is full and fast, the tongue foul, bowels constipated and appetite lost; thirst is constant and usually distressing; the urine usually diminished, high-colored and after the first day albuminous. A marked leucocytosis is usual.

Locally we find the inflammatory process commencing in nearly every case near the nose (rarely the ear, eye or mouth seem to be the point of initial infection) and spreading thence till the entire face (or one side) is involved; the scalp and neck may be said to form the usual boundaries. However, in serious cases the scalp may be invaded—together with the tissues of the neck—and then it is that the disease assumes its most threatening aspect. Old-time practicians were in the habit of giving up their patient, once the inflammatory process involved the scalp. Today we limit the spread of the infection very nearly at will, realizing, as we do, that the *bacteria exist in the margin of the area affected*, dying out entirely in the central portions. The constitu-

tional disturbances are due partly to the toxins excreted by the bacteria and partly to the derangement of the body-chemistry caused by the inherent effort of the system to repel the invading microorganisms.

The skin of the affected parts is red, tense, edematous and glossy and not infrequently bullæ appear. The eyes, nose and mouth are enormously swollen, in some cases to such an extent that the patient becomes unrecognizable. The margin of the erysipelatous area is raised and distinct; quite often it assumes a ribbon-like appearance. However, there is great variation in the local manifestations. Occasionally the skin reddens but little and bullæ are numerous; again, the skin becomes almost scarlet and intensely edematous, but blebs are almost entirely absent.

In all cases, however, the commencement of the process is at the junction of skin and mucous membrane and its steady progress is apparent toward the neck and scalp, and more or less pain, tingling and burning are complained of. The disease is at its height on the fourth or fifth day; at this time the temperature reaches the maximum height (103°—105°F.) and signs of delirium may appear. With varying degrees of rapidity the local process progresses until somewhere about this time the erythematous margin ceases to advance and becomes paler, swelling subsides, itching makes itself felt instead of burning and pain, and the temperature declines; desquamation follows the crisis and the patient, about the tenth day, is practically free from distress. Relapses are not infrequent, especially when strong germicidal applications and thorough systemic antiseptics have not been used.

Diagnosis.—This is easily made. The abrupt onset, the high temperature, the commencement of inflammation at a mucocutaneous point, which gradually spreads, presenting meanwhile a distinct raised border, all these features are distinctive. Erythema does not cause high temperature

or swelling. Eczema presents an irregular inflamed area which itches intensely, but there is no fever or constitutional disturbance. Dermatitis venenata (rhus toxicodendron or other local poisoning) may at first be mistaken for erysipelas, but usually both the hands and face are affected (or some other portion of the body presents evidences of the infection) and the raised border of erysipelas is wanting. The systemic disturbances are also either absent entirely or but slight. In rhus toxicodendron poisoning blebs are almost invariably present in large numbers.

Treatment.—Here, if anywhere, the need for local and constitutional antiseptic procedures is evident. The first step is to secure a thoroughly clean alimentary canal and active skin, liver and kidneys, applying locally meanwhile a mild, cooling antiseptic. This, of course, if we get the case *early*, when the local process has not yet assumed serious proportions.

There is nothing so grateful to the patient (and few things so effective) as a saturated solution of magnesium sulphate (two ounces to the pint of boiling water) applied cold on compresses to the parts; and changed often. Ten to twenty minims of carbolic acid or creolin should be added to the pint of solution before the compresses are wetted. This is preferable to ointments or pastes. Carbenzol, ichthyol, etc., may be used from the first with good results; a solution (3-percent) of resorcin will also prove promptly alleviative.

The writer prefers, however, to use the first-named solution until constitutional treatment has been instituted. He orders the epsom-salt compresses on at once and exhibits every half hour, for six doses, of blue mass and soda, gr. 1-4, podophyllin, gr. 1-6; two hours after the last dose a saline laxative draught (magnesium sulphate) is taken, and as soon as resultant stools have been disposed of a large enema of any good alkaline antiseptic solution is given. The

liquor antisepticus compositus of the U. S. P. is excellent Use one ounce of this solution to the quart of water.

Every hour gr. 1-6 of calcium sulphide is given, echinacea gr. 1 (or 10 minims of the specific tincture) being added to each third dose. Grain 1-67 of digitalin, gr. 1-134 of aconitine (amorphous) and gr. 1-67 of pilocarpine are exhibited to a child of twelve every hour for three or four doses (or till temperature falls one to two degrees and the skin is moist), then the interval between doses is lengthened to three hours. Smaller doses (in solution) are given at same intervals to younger patients.

At least four times daily ten grains of the triple sulphocarbolates is given in solution—this for the first two days, after that half such doses will suffice. The enema is repeated daily while the blue mass and soda and podophyllin are given every third night; a saline laxative draught is ordered each morning. Here, practically, is the internal treatment of the disease, though if ten drops of nuclein be exhibited twice daily (hypodermically) the condition is more rapidly and positively controlled.

As soon as we have obtained results from our medication (on the second day as a rule) we begin to control the local infection. The step to be described will of course be taken *at once* in severe or far-advanced cases. Here delay might prove disastrous and we therefore cut short the local process and then institute systemic medication.

Carefully cleanse the affected area with warm boric-acid solution and then with a camelshair brush paint the entire margin—and for an inch beyond—with pure carbolic acid. In one minute neutralize with alcohol, dry with clean cotton and reapply the first dressing. This procedure will, if properly performed upon a patient under effective medication, put a prompt stop to the infection. Nitrate of silver (solid stick or saturated solution) is not so efficient but may be used if carbolic acid and alcohol are not available.

Fever having been reduced and local conditions being under control we may stop the pilocarpine and substitute iron arsenate in doses of gr. 1-6. The writer prefers at this stage, however, to exhibit the three arsenates (of iron, quinine and strychnine) together, three times daily, using for convenience the triple arsenates tablet (with nuclein). Two tablets form an ordinary "full dose." This formula, together with boldine, gr. 2-67, may be given t. i. d. for a month with advantage to the patient. Diet throughout must be light but nutritious.

The daily sponging-off of the patient with the solution of magnesium sulphate is of marked benefit, and where there is renal torpidity the exhibition of arbutin, gr. 1, with a glass of barley water two or three times daily, will be useful; the daily enema however usually acts as a diuretic.

A study of the above therapeutic measures will reveal the fact that we aim to support the patient himself; maintain a medically germ-free intestine and render the lymphatics uncongenial to germ-propagation, while taking steps to enable the phagocytes to destroy such bacteria as may already have gained access to the blood. We equalize circulation, make the skin an ally and destroy (locally) the invading streptococci. The practical results which follow such a procedure prove the soundness of the theory upon which the treatment is built.

Additional Remedies and Suggestions.—The physician should, however, treat the *conditions* present, not "named diseases," and while these measures serve in nearly all cases in which we have the group of symptoms known as "erysipelas," we must be prepared intelligently to add to or change our medication as the pathological conditions present in any one patient may demand. For instance, we are called late to a neglected or badly treated case. The local condition is serious, systemic

infection intense and the delirious, disfigured patient presents a typical picture of sepsis "run amuck."

No time is to be lost and our procedures must be well-advised and promptly effective. To begin with, gr. 1-3 of calcium sulphide must be given every half hour with echinacea in full dosage hourly. Locally gauze wrung out of a solution of echinacea will have to be applied and changed frequently, the skin about the margin being painted every three hours with pure guaiacol. Calomel, gr. 1-3, iridin, gr. 1-3, and xanthoxylin, gr. 1-6, should be given together hourly for six hours and, one hour after the last dose, a full dose of magnesium sulphate must be exhibited to flush the alimentary canal. The latter should be repeated twice daily and the calomel and iridin every thirty-six hours till the disease yields. Colloidal silver ointment (unguentum Credé) will here give us good results; a piece the size of a hickory-nut being rubbed in morning and night. The person doing the rubbing should wear finger-cots; the ointment must be absorbed. Nuclein is dropped under the tongue or given subcutaneously and the enema and epsom salt sponge-bath used morning and night.

Veratrine will be exhibited if the pulse is full and bounding and the heavily coated tongue shows a streak in the center. If the skin is darkly red and moist this drug is particularly called for. A thin, quick pulse with dry skin (bright red) will suggest aconitine, though gelseminine seems to give even better results in these pronounced septic cases.

The selected remedy must be pushed to effect, small doses being given pending the action of the eliminants and antiseptics.

As soon as free bowel-action and profused iuresis are secured the temperature will steadily fall, and the local applications and use of calcium sulphide, echinacea

and colloidal silver will prevent further elevation. Here cardiac support becomes important and cactin, with strychnine nitrate, will prove invaluable, and gr. 1-67 of each drug may be given every three hours. Bryonin and macrotin often will prove useful when pain is severe and of a rheumatic type. Barosmin may be added if the urine is scanty, and if also highly acid, lithium benzoate should be given at the same time.

Pilocarpine is distinctly an *early* remedy; in the initial stages it may be pushed fearlessly and with none but good results, but after a few days it is not to be selected. One or two hypodermatics of pilocarpine with an initial purge and a twenty-four-hours' course of calcium sulphide have served hundreds of times to cut short an oncoming erysipelas.

A word here as to *erysipelas neonatorum.* As we know, this disease is fearfully fatal. Echinacea locally and internally (one drop of specific tincture or gr. 1-12 of the powdered extract) with calcium sulphide, nuclein and inunctions of unguentum Credé will prove our sheet-anchors. Ichthyol or carbenzol must be used freely about the umbilicus after thoroughly washing the parts with a 3-percent solution of resorcin. One part of either preparation to two of lanolin will serve best.

Camphor or aromatic spirit of ammonia are the safest stimulants; aconitine in *minute* doses in solution, with cactin and strychnine, to guard the heart, will complete the list of dependable remedies. The epsom-salt solution (creolinized) is of especial value here and may be used on compresses locally or with the "wet-pack" for general eliminative effect.

INFLUENZA (THE GRIPPE)

This is an acute infectious disease, sometimes sporadic, oftener epidemic. The causative germ is known as

Peiffer's bacillus. Children of all ages are prone to fall victims to the epidemic form of influenza, and very young children are liable to succumb unless prompt treatment is given them.

The diagnosis is comparatively simple when an epidemic rages, but sporadic cases are liable to be faultily diagnosed. Moreover, the disease assumes many widely different aspects, sometimes resembling a common "cold," while in other cases there may be high fever, racking muscular and bone-pains, severe gastrointestinal and cardiac disturbances; hence mistakes are quite likely to occur.

I cannot give here a very complete set of clinical pictures but every practician should be familiar with the symptoms; and if he will instruct his clientele to call him early in even suspicious cases, fully eighty percent of the trouble can be averted. It is safe to say that influenza is endemic in the cities and large towns of the East. The disease is not often directly fatal, but nephritis, myocarditis or endocarditis may follow and cause death. Occasionally the toxemia is so profound that the child succumbs from exhaustion.

The incubation period is from eight hours to three days. The usual *symptoms* are sudden onset, coryza, high fever and some bronchitis or pharyngitis. The eyes are suffused (conjunctivitis is common) and more or less pain is felt throughout the body: splitting headaches and weakness out of all proportion to the other symptoms will often be noted. In one form of the disease diarrhea and total anorexia present with symptoms which are almost typhoidal in character. In the next case profound disturbance of the nervous system may exist and not infrequently the condition is mistaken for meningitis. Pneumonia, pleurisy, otitis media, colitis, empyema and endo- or myocarditis are among the possible complications.

The disease usually passes away in a week or ten days. A stubborn lingering form sometimes is met with and here autoxemia is invariably causative. The prognosis in all but the worst forms and in very young children is good; in the exceptions mentioned it is guarded.

Strumous children, the anemic and rachitic, often show marked debility and malassimilation for weeks after an attack; phthisis may follow or begin during the acute stage. In the mildest form the entire train of symptoms disappears in three days. Not much treatment but great watchfulness is needed here.

Treatment.—Put the patient to bed and cut off all solid foods. Give at once calomel and iridin, gr. 1-6 each, and podophyllotoxin, gr. 1-67, every hour for three to four doses, and two hours after the last dose exhibit a saline laxative draught. Then order copious enemata, twice daily, of a mild alkaline antiseptic solution. The body should be sponged twice or thrice daily with epsom-salt solution, to each pint of which ten drops of creolin have been added. Calcium sulphide, gr. 1-6 hourly; nuclein, six drops every four hours; calx iodata, gr. 1-3, at like intervals. Have the nuclein absorbed from the buccal mucosa—wash out mouth and nares well with a solution of the menthol compound tablet (one tablet to twelve ounces of distilled water, adding an ounce of glycerin) before any medicine whatever is taken. This *cleanliness of the mucosa is important.* In twenty-four teaspoonfuls of water dissolve six granules each of aconitine, atropine, digitalin and strychnine and give thirty drops half-hourly or hourly till the fever falls, which it will soon do under this treatment.

If nervous phenomena predominate give scutellarin and avenin, gr. 1-6 each every two hours to effect. If the gastrointestinal tract suffers (*after* above treatment has been instituted) stop all other medication for twenty-

four hours and give hyoscyamine, gr. 1-500 every three hours; sodium benzoate, gr. 1-2, and sodium sulphocarbolate, grs. 2, alternately every four hours, adding hydrastin, gr. 1-6, to each dose. Nothing but barley water, clam bouillon or milk and vichy or albumen water the while. Occasionally it is well to give a full dose of phenacetin and then follow with the aconitine, etc. Where muscular pain is severe, macrotin, gr. 1-6, and bryonin, gr. 1-67, with a little hot water may be given hourly "to effect."

Codeine, gr. 2-67, may be demanded to relieve cough, but *never* give this drug for sleeplessness. Passiflora is safer and as efficient. Stop aconitine when the fever falls, and atropine (or hyoscyamine) as pain and coryza yield.

Do not allow food till you have the disease well under control and always give light diet for some days, securing digestion by the exhibition of papayotin after meals. Juglandin, gr. 1-6, and hydrastin, gr. 1-12, half an hour before food will prove an excellent tonic for the convalescent period. Two triple arsenates with nuclein tablets may be ordered after food for a month. Bryonin and asclepidin for pleuritic symptoms; cactin when the heart wavers; strychnine or brucine to take up the slack; obstinate vomiting will yield to cerium oxalate or the "gastric-sedative" formula (resorcin, gr. 1-40; cocaine hydrochloride, gr. 1-100; atropine sulphate, gr. 1-2500; delphinine, gr. 1-1000) half-hourly "to effect."

Syringe the ears and irrigate the nares with alkaline antiseptics from the first and spray nose and throat with campho-menthol or similar oily antiseptic. The room may well be kept filled with antiseptic vapor—oil of eucalyptus or sanitas oil, a few drops on a can half full of boiling water, or cresoline may be vaporized on the standard lamp. Do not have any draughts; and have the stools voided in a bed-pan, being sure to disinfect them with

carbolic acid. If you let your patient up too soon relapse is almost sure. Watch the urine carefully and give a diuretic if needed. Asparagin or arbutin with hydrangea work excellently.

VARIOLA (SMALLPOX)

In these days when general vaccination is compulsory smallpox does not reap a bountiful harvest among the children, for wherever these gather together for any reason, there the vaccine point also is.

Some physicians (especially those in country districts) have practised for thirty years and never saw a case of variola; many men practising today will never treat a case, but on the other hand, many doctors who have been calmly treating "Cuban itch" or "Mexican rash" unwittingly dealt with variola itself. Of late years variola has assumed a mild form, but here and there throughout the country little outbursts of acknowledged smallpox, together with epidemics an undefined disease, serve to remind us that the enemy is not dead but resting.

To one who has smelt a smallpox patient it would seem impossible for error in diagnosis to occur, and yet the cases in Illinois during 1906–'07 were in most instances so benignant that odor was absent. Yet there can be no question that it was true variola. "Varioloid" perhaps we may term it, though it is dangerous to attempt strict classification.

The course of the disease in children is similar to that seen in adult practice, but in variola vera the fever is high early and the nervous system suffers very severely. The disorder later (before eruption appears even) assumes a typhoid character and death may occur on the third or fourth day. Children at the breast are apt to be thus affected. It must not be forgotten that congenital smallpox is possible.

The typical course of variola is too well understood to need description here, suffice it to say the unvaccinated child who has been exposed will in from six to ten days have a chill (perhaps convulsion), high fever (103°—105°F.) and intense pains in the head and back. Nausea and vomiting are common. Infants may show merely prostration and anorexia first, then high fever, restlessness and convulsions in which death may take place, or on the second day a papular eruption may appear upon the buccal and pharyngeal mucosa, and the end may come at this stage; the child may survive however and the typical eruption continue, but very rarely indeed will the little ones survive till the suppurative stage.

Children of two years and up will however run the regular course, the temperature at the end of twenty-four hours often being 104°F., where it remains till on the third or fourth day the eruption appears. At this time the fever falls to perhaps 100° or 101°F.; the pulse is full and quite rapid; the eruption appears first upon the forehead and lips, the spots being coarse and red; gradually the rash appears over the body though the hands may be spared; the scalp often escapes altogether. On the fifth day the eruption becomes papular and if the temperature has not fallen earlier it will now; the patient may even feel quite well though as a rule there is backache, headache and lassitude. In twenty-four or thirty-six hours the papules become vesicular; umbilication follows rapidly and pustules are present on the eighth day. On the ninth each pustule is surrounded by a red band—the areola—and now there is swelling of the features (sometimes the patient cannot be recognized), a stench which is intolerable fills the room and the purulent content of the pustules oozes forth (eleventh day) and a scab or crust forms; this, untouched, drops off about the fifteenth or sixteenth day, leaving a red,

glazed surface which later becomes a white depressed cicatrix. (This "pitting" in smallpox is now almost entirely prevented.)

During the progress of the disease nephritis may set in; otitis media, iritis, keratitis, or severe conjunctivitis may cause trouble, and gastrointestinal affections are common. The lungs, larynx, bronchi and mucosa may become severely inflamed, and a vicious form of stomatitis is not uncommon. Cancrum oris may follow this. These complications must be met promptly.

There are, as has been said, various modifications of the above, and a hemorrhagic form of variola exists though it is seldom seen in this country. The mortality in such cases is high: in ordinary smallpox it ranges from 15 to 25 percent. Where alkaloidal treatment is instituted it is less than 8 percent.

In making a diagnosis note the various stages of the eruption: remember that the papules are hard (feeling like shot under the skin), that the vesicles are umbilicated and divided into compartments; that the fever rises again as the vesicles become pustular and remains high until desquamation.

General Measures.—Quarantine positively and disinfect as far as possible those who have been near the patient; vaccinate everyone in the family and neighborhood and report the case to the authorities without delay. Prompt and thorough quarantine may save an epidemic. Have the nurse wear a long linen garment and cap; rubber gloves are desirable; the former should be worn always and dropped into a solution of mercury bichloride or carbolic acid before going to be washed (boiled). The physician should take off coat, vest, etc., before entering the chamber and don a gown and gloves, also linen cap; these are dropped in an anteroom (the sick-chamber is shut off with a heavy sheet soaked with a creolin solu-

tion) and here the hands are well washed with an antiseptic, and the physician sprays his entire body thoroughly with a formalin solution. It is wise to pull on a pair of list slippers. With proper care infection need not be carried forth. The nares and mouth should be sprayed with an antiseptic and the nails receive particular attention: creolin and potassium permanganate are the best disinfectants. A small oil lamp may keep a little water boiling in the room and on this every few hours drop ten minims of sanitas oil; the steam will destroy germs and (often) prevent bronchial and lung disorders. Where smallpox hospitals exist these measures are temporary only. The health inspectors will attend to the removal of patient and to disinfection.

Treatment.—The medication in ordinary uncomplicated cases is as follows: Calomel, gr. 1-6, iridin, gr. 1-6, podophyllotoxin, gr. 1-67, hourly for four doses; a full dose of saline laxative two hours after the last dose, repeating every other night. Calcium sulphide, gr. 1-3, and echinacea, gr. 1-2, every hour for forty-eight hours, then every two hours. Every four hours 5 to 10 grains of the sulphocarbolates in solution. Give aconitine, digitalin and veratrine in small repeated dose (in solution) till the fever falls; stop when the thermometer shows not more than 100°F.

Barley water is the beverage of choice, and arbutin, gr. 1-2, may be given several times daily to insure activity of the kidneys. Fruit juices are always acceptable.

From the first sponge the entire body three times daily with carbolated epsom-salt solution (magnesium sulphate, one ounce; carbolic acid (or creolin), ten drops; water, one quart). Smear the face with carbenzol or apply a piece of lint, with holes for eyes, nostrils and mouth, well smeared with carbenzol, one part, resin cerate, one part. Ichthyol may be used with glycerin. This

will prevent pitting, and when the papules appear the whole body may be so treated and wrapped in old sheeting; it will be wiped off gently with cotton (which should be burned) before sponging with the epsom-salt solution which should at this stage be *warm.*

The vesicles under this treatment will be few and small and each one should be treated thus: Open with a sharp, slender bistoury or flat needle; with hydrogen peroxide destroy the contents and dry; then with a toothpick swab the cavity with pure carbolic acid and after touching, say, five vesicles, begin at the first and neutralize the acid with alcohol. In this way pustulation is prevented, the same steps may be taken however with developed pustules. Be thorough. It pays for the nurse to devote several hours to the work each day for the two or three days it will be necessary.

The patient receives ten to fifteen drops of nuclein morning, noon and night, and gets milk, clear broths, thin gruels and fruit juices (baked apples or apple sauce with zwieback are allowable) only. Water *ad libitum*—barley water is better, however; seltzer and vichy are allowable also. The mouth *must* be cleansed before food or drink is given. A chinasol or potassium permanganate solution serves. Liquor antisepticus of the U. S. P. is useful also, but the menthol compound tablet (one tablet to sixteen ounces of water) is best of all. The epsom-salt sponging is of particular value during desquamation. It positively allays formication.

Cactin to sustain the heart, passiflora and avenin if the patient is nervous, brucine or strychnine in asthenic conditions. Macrotin and salithia (in place of plain saline laxative) if muscular pains are experienced, or if pleurisy threatens, gr. 1-6 of macrotin and gr. 1-67 of bryonin may be given every three hours, the salithia (one teaspoonful in water) morning and night.

The urine should be carefully watched and if nephritic symptoms appear, treat promptly. (See "Nephritis.") Delirium (which should not present) is to be controlled with hyoscine hydrobromide or hyoscyamine; sodium bromide, 2 to 5 grains, and atropine valerianate, gr. 1-134, will also prove efficacious. The conjunctivitis will yield to a solution of boric acid, 5 grains; zinc sulphocarbolate, 2 grains; glycerin, 1-2 dram; water 1 ounce. Or ichthyol, 1-2 dram, boric acid, 1 dram, rose water, 6 ounces, may be applied freely every two hours. Salol, gr. 1-2, quinine arsenate, gr. 1-6, menthol, 1 granule, every four hours, will markedly alleviate the cutaneous irritation and act as an efficient antipyretic. This formula once used will never be relinquished.

Leave the convalescent patient upon quassin, gr. 1-12, juglandin, gr. 1-6, nuclein, gtt. 6, between meals; one or two triple arsenates after food, with papayotin, gr. 1-3, and sanguiferrin, one dram, with each meal. Any particular symptom will of course receive attention.

It may be well to call attention to the fact that the system is still loaded with debris and a daily saline laxative together with an active alterative eliminant, such as xanthoxylin or iridin, will be essential. Of either drug gr. 1-3 may be given half an hour before eating. If there is edema, hydrastin or berberine (one granule) may be added. Apocynin is occasionally indicated.

In closing I would point out the great value of two other drugs: calcium lactophosphate to aid in reconstruction, and echinacea to control the depraved condition of the body-fluids toward the end of the disease. If sepsis is at all evident, push this drug in massive dosage (1 to 2 grains every three hours)—it invariably gives results. I might also state that many observant, educated practicians report control of odor and pustulation by applying equal parts of echinacea and thuja (aqueous

preparation) three times a day. I should use it in my next case, as my experience with these drugs leads me to regard them as marvelously active antiseptics and depurants. They are moreover bactericidal and slightly astringent.

VACCINIA AND VACCINATION

By inoculating the human with cow-pox virus we produce vaccinia—a modified variola; the local manifestations merely evidence the effect upon the *system*. Were there solely a limited inflammation, vaccination would be useless, but at present, unless we produce the typical "pock," we consider the individual not to be affected—or "infected," rather. The homeopaths are firmly of the opinion that the full systemic effect can be obtained from a dilution of cow-pox virus taken internally, and while it would seem to the reasoning man that the gastric juices, etc., would merely act upon the material as all similar digestible matter is acted upon, thus entirely neutralizing its virulence, patients so treated are claimed not to contract smallpox. Whether cow-pox is bovine variola and vaccinia merely smallpox modified by transmission through a bovine intermediary is an unsettled question. Neither is it a matter of importance; since vaccination is a fairly general practice, smallpox has become rare instead of being as prevalent as measles, while in countries where a second vaccination is obligatory the disease has totally disappeared. (See German reports.)

Vaccination does not protect indefinitely; some people are more susceptible to the germ of smallpox than others; hence out of ten men effectively vaccinated at the same time seven would escape if exposed at the end of five years; if these same men were revaccinated after five years and all exposed two years later, nine would escape;

and if the entire ten were vaccinated three times (at five to seven years' intervals) and exposed subsequently, all would prove immune. Thus infants should be vaccinated, and revaccination done at the age of eight or nine years, and again within the next ten years—if the patient does not "take," immunity still exists.

How to Vaccinate

Use fresh lymph—the capillary tubes are infinitely preferable to "points." Do not use antiseptics on the arm but cleanse with warm salt water and dry with sterile cotton. With a sterile needle criss-cross the skin over the insertion of the deltoid on the left arm, making a denuded area not larger than a dime. If preferred, a single cut, a quarter inch long may be made *through the skin* and the serum applied. Girls may, if desired, be vaccinated on the leg. Do not draw blood; if the wound does bleed, take up the superfluous fluid with a piece of cotton. Apply the end of the broken tube to the oozing surface and eject the virus by pressure on the bulb. (If this fails, *blow* through the tube.) Rub the virus in well with the round (eye) end of a needle and at once cover the area with a raised shield; over this put two or three turns of a gauze bandage to insure protection. Infection may follow through "leaving the arm to dry" in the air of a doctor's office or school-room.

About the third day redness appears and the site itches. (Children must be warned *not to remove the shield* or lift the ends up.) A papule soon makes its appearance on the margin and this may extend till a circular vesicle is formed. Swelling and redness increase quite markedly and by the tenth day a well-defined pustule (of varying shape and size) will be noted.

By this time it will usually be necessary to remove the shield. (The "pock" may extend under its edge

or the pressure of edge may cause pain, or a discharge may have occurred and serum or pus have dried about the margin.) If a fairly large ventilated celluloid shield has been properly fastened the progress of things may be watched without raising it, but even then, if drying discharges are noted about the "pock"—and this nearly always happens—it is necessary very gently to remove such deposits with warm salt solution (or hydrogen peroxide). In rare cases the vesicle does not rupture, it umbilicates, becomes a typical pustule, and the latter dries up, falling off, as a brownish scab, about the twenty-first day. More or less fever, some headache and malaise appear after the third day in older children. The axillary glands generally become slightly indurated.

Atypical cases are common. The child after a day or so becomes feverish and ill, erythematous areas may appear—sometimes covering almost the entire body; a "rash" may break out (but quickly vanishes), small vesicles make their appearance, or urticaria may develop. Rarely erysipelas develops. By the third day several vesicles may appear on the arm and a general erythema or urticaria coexist. A mild mercurial purge and a few doses of saline laxative are sufficient. The *body* may be sponged with warm epsom-salt solution. After the third day—while the local condition seems to be normal—a general vaccinia may break out, or lichen urticatus develop. The child must be kept in his bed and treated as above. About the tenth day—or whenever pustulation occurs—signs of extraneous infection present: the vaccinated area may ulcerate, an abscess form or the glands suppurate (rarely).

The most common difficulty however is "infected pock." The arm swells, a foul scab covers abundant pus and a deep punched-out hole (sometimes baring the muscles) confronts the operator. The lesion treated

half-heartedly, fills up with exuberant granulations which bleed at a touch and around this protruding mass a thin pus constantly exudes. Just such arms have, later, been amputated and scores of physicians throughout the country each year have "had chills" over these cases. It is useless to regard such a lesion as something to be "protected;" it is an infected wound and should be treated as such promptly.

To merely cleanse the spot, apply a dusting powder, and bandage, means weeks of trouble—and a gaping hole. Irrigate with warm salt water, then apply hydrogen peroxide till the fluid remains clear, dry, and with a match wound with a little cotton swab with pure carbolic acid; after a minute apply alcohol (do not use *wood*-alcohol); again dry well and dress with carbenzol and a pad of gauze, or use pure oil of turpentine (Merck) on one thickness of gauze, and cover with a pad of plain sterile gauze. Repeat the process, if needed, twenty-four hours later (examine the arm, then, anyhow), or if it is in satisfactory condition simply reapply the turpentine and gauze. Later the wound will heal under carbenzol or thuja. In some pronounced cases it is necessary to excise the mass and curet, then treat as a septic wound. Anesthesia is necessary. In ordinary "sore arms" thorough cleansing, as suggested—painting the affected area with oil of turpentine and a carbenzol and gauze dressing—will suffice.

In septic conditions or glandular suppuration push echinacea, gr. 1, every three hours; calcium sulphide, gr. 1-6, hourly, and nuclein, gtt. 10, three times daily.

General vaccinia calls for rest in bed, a calomel purge, and saline laxatives only.

PERTUSSIS

A most infectious disease, presenting three stages: catarrhal, spasmodic, and retrogressive. One attack

usually confers immunity. Infection is in nearly every case by direct contact; by fomites rarely. Children under three suffer most; after twelve it is almost unknown. In sucklings it is dangerous. During the entire catarrhal and until late in the spasmodic stage, infection is almost certain. The incubative period is from one to two weeks but it has developed three days after exposure. The disease may be epidemic or sporadic. The specific bacterium is unknown, but Koplik and Czaplewski claim to have isolated it.

The disorder is regarded by the laity as something which "has to be" and too often they let the malady run its course, believing that no treatment avails. However, the very people who regard pertussis so lightly are the very ones whose children suffer most, for they usually live in crowded districts or tenements and where the air is impure. Improper feeding here also is the rule. The prognosis for cure therefore is not favorable among the poorer element in cities and towns; in the country and among the better classes generally it is good. Infants and rachitic or purpuric children may suffer quite severely. Those who have rhinitis or chronic diseases of the respiratory tract also prove bad patients.

The complications are many and may prove serious: hemorrhages (nasal, subconjunctival and visceral), convulsions, paralysis (meningeal hemorrhage), bronchopneumonia, and diarrhea are to be especially noted. Chronic bronchitis may follow pertussis.

Catarrhal Stage.—There is more or less coryza, slight fever and malaise and a dry, irritating cough; the larynx may be inflamed; the cough gradually changes in character till in twelve or fourteen days the typical spasmodic cough makes its appearance. Some children "whoop" very early in the disease, others may not do so at all. Sneezing, vomiting or faintness may replace

the "whoop" or, for that matter, precede it. Many children involuntarily wet themselves each time the paroxysm occurs. Those old enough to do so may run to an adult or grasp the nearest object and hold on during the attack. The cough at first is frequent, short and barking, with sharp inspirations; the eyes suffuse, the lips become blue, and the child looks to be (as it is) in deep distress; finally, after a moment's spasm, a stridulous whooping inspiration presages the expulsion of a small piece of viscid mucus—not infrequently the stomach voids its contents at the same time. In the most severe cases bleeding from the nose or ears is common. The sputum may be bloody. Hernia, prolapses of the bowel and involuntary defecation are other features.

This stage may persist four or even six weeks, the child having from ten to forty paroxysms daily. The frenum often is injured by the teeth and not seldom is found to be ulcerated. Slowly but surely the violence and frequency of the attacks lessens until only an ordinary bronchitis remains: this is the declining stage and it may persist for weeks.

Treatment.—Here, again, rational treatment instituted early means much. The time to cure whooping-cough is before the "whoop" is heard. Unhappily we do not often get our patients till later—till the whoop has made the presence of the disease evident. Even then, if it be fairly soon in the second stage, we can do a great deal—may even abort the disorder. Later we can only cut short the paroxysms and render them less frequent.

In the *catarrhal stage* three remedies are enough (after cleaning out the bowel): atropine, calcium sulphide, calx iodata. Open the bowel freely with calomel, gr. 1-10 to 1-6, and podophyllin, gr. 1-67 to 1-6, repeated hourly for four doses and follow some hours later with

a saline laxative. Dissolve ten granules of atropine valerianate in twenty-four teaspoonfuls of water and give thirty drops every two hours. Every hour for forty-eight hours while the child is awake give gr. 1-6 of calcium sulphide, and every three hours gr. 1-3 to gr. 2-3 of calx iodata. The valerianate is better than the sulphate of atropine, but gr. 1-3000 to 1-1500 of the latter may be used if preferred. My "calmative" formula is also most efficient—and children like it. (Formula given earlier.) Dissolve ten tablets in 3 ounces of water (sweetened) and give 20 to 30 drops at a dose. Wash out the nares and buccal cavity with an alkaline solution: Dobell's, glycothymoline or a solution of the menthol compound tablet (one tablet to 12 ounces of water), and then spray with campho-menthol.

These measures alone (early) will *abort* whooping cough. If it has obtained a firmer hold, add brucine, gr. 1-134, quinine hydroferrocyanide, gr. 1-67, nuclein, gtt. 6, three times daily, to improve nutrition and increase resistance.

The *simple cough* will yield to calx iodata, but if it does not, give iodoform, gr. 1-12, codeine, gr. 1-24, emetine, gr. 1-67 ("catarrh bronchial" tablet) hourly till nausea is complained of or the cough ceases. Have the child well wrapped but in the open air or sun—away from other children, of course. At night have the bedroom filled with medicated (eucalyptol, oil sanitas) steam or cresoline vapor. (It often serves to keep the child in a small room so medicated for twenty-four hours, medicating as directed, meanwhile.) Treated thus there will be no "second stage."

In the *spasmodic stage*—if it has to be met—we must be careful not to overmedicate an already irritable stomach. Clean out the bowel and keep it clean with the sulphocarbolates (2 to 5 grains in solution an hour after food).

Use the medicated vapor freely while the child is indoors, and irrigate and spray the nares. Alternate cicutine, gr. 1-134, and the atropine solution every two hours, and push the "catarrh bronchial" formula to effect. Or give cicutine hydrobromide, gr. 1-134, lobelin, gr. 1-134, camphor monobromate, gr. 1-6, quinine hydroferrocyanide, gr. 1-67 ("whooping-cough, Abbott" tablet) one dose every two hours, and the "calmative" (or atropine valerianate) as already directed every three hours till the face flushes. Nuclein, gtt. 6, avenin, gr. 2-3, scutellarin, gr. 1-3, morning and night. There is no more effective treatment than this. Pertussin, bromoform, tussol and antispasmin are new synthetics which have been lauded; they should be used with caution.

In even the most desperate cases proper care of the nares and the free use of atropine or hyoscyamine—cicutine and camphor monobromate will control the spasm. Another hint: if the child is old enough, teach it to run, as soon as cough begins, to an adult, with the tongue out; this is grasped with the thumb and finger (covered with a handkerchief) and pulled forward, at the same time the side of the hand depresses the under jaw. In a few seconds the spasm will pass. Some children learn to do this for themselves, and once the "habit" is broken, conditions rapidly improve.

Passiflora in full doses will secure sleep in the worst cases, or a granule or two (gr. 1-6 to 1-3), of croton-chloral may be exhibited at bedtime.

In hemorrhagic cases the severity of the spasm *must* be controlled. I would suggest there the use of hyoscine-morphine-cactin—one-eighth to one-fourth tablet. It is well to remember that, as in croup, a compress wetted well in epsom-salt solution placed about the throat and covered with oiled silk and flannel will often give relief for ten to twelve hours. Try it at night.

TYPHOID (ENTERIC) FEVER

Rarely seen prior to the fifth year but may be present at birth (transmission from mother.) Not every case of enteric infection is "typhoid," but every such case should be treated as though typhoid did exist. We know now that the bacillus typhosis *can* be reached, and perforation of the intestine and extensive involvement of Peyer's patches with hemorrhages and death are practically things of the past.

Further than impressing upon the reader the fact that the water and milk supply should be carefully looked over whenever a case of typhoid occurs I shall omit all reference to etiology or pathology: for these the practician should consult "Alkaloidal Practice" or any good modern work on the treatment of disease.

The incubative period is two weeks (rarely, ten days) and often a positive diagnosis can only be made early by cultures or the Widal reaction. Blood should be secured at the first visit, and forwarded to the nearest pathologist.

In childhood the disease often runs its course in two weeks; it may however last six. The *symptoms* vary greatly, as does the temperature, which may be irregular or continuous. The early symptoms consist of malaise, foul tongue, fever, and possibly diarrhea. Constipation may, however, exist at the outset. Sometimes the whole train of symptoms come on within twenty-four hours and the Widal reaction is positive. Or the disease makes its appearance slowly and the reaction is uncertain or negative at first.

In children the "rose-spots" are much less apparent than in adults, appearing faintly on the ninth or tenth day on abdomen and back; they last a day or two and disappear, but fresh crops may develop. I have seen

one severe case without a visible spot. The abdominal symptoms are also less distinct in children: there may be but slight tenderness and little or no tympanites; occasionally, however, both are pronounced, and well-marked gurgling in the iliac fossa can be detected.

The spleen is *enlarged always*, and as a rule more or less albumin will be detected in the urine. The pulse, though fast, is not as high as it would be with a like temperature in other infections. Hyperpyrexia, if present, is likely to appear about the middle of the course. As already noted, the "typhoid curve" must not be relied on except in children over twelve. In mild cases the fever disappears in a week or ten days: this does not mean, however, that the child is well. Comparatively, emaciation is more pronounced than in adults. Pneumonia, otitis media, meningitis or bronchitis may complicate or follow an attack.

If a child has fever, enlarged spleen and diarrhea (or even constipation) tenderness and tympanites, typhoid must be suspected. If rose-spots are found and the Widal reaction is positive, typhoid is assured. It is unfortunate that the Widal reaction can rarely be obtained before the seventh day and the rose-spots do not appear till the ninth at best. The bacillus typhosus may be discovered in the urine and feces quite early sometimes. Malaria, ileocolitis and tuberculosis must be excluded. Ileocolitis presents more acute bowel-symptoms; the plasmodium malariæ will be found in malaria (and quinine controls the fever), the pulse is more rapid and lung or other symptoms are present in tuberculosis. Meningitis cannot always be distinguished. The safe rule is: "in suspected typhoid treat for typhoid and wait report as to Widal reaction—and rose-spots."

Treatment.—Simple again—as simple as can be—and as effective. Put the patient to bed in an airy but

isolated chamber. Arrange that all excreta can be thoroughly disinfected as passed; chloride of lime, carbolic acid or creolin should be thrown over the feces and into the urine; all vessels and linen used by the patient should be sterilized (steam, formalin vapor, dry heat), clothing and bedding should be thrown into a carbolic solution; pillows and mattresses may be baked or steamed. Formaldehyde generators can be easily secured now. Give liquid diet—milk, clam bouillon, barley water, with sanguiferrin or bovinine, and water as needed. Fruit juices in moderation are not injurious; rice water (congee) is excellent.

As soon as diagnosis is made order calomel, gr. 1-10 to 1-3, podophyllotoxin, gr. 1-67 to 1-12, every hour for four to six hours, and while this is being attended to, have the bowel well flushed with warm salt water. Three hours after the last dose of calomel, etc., exhibit a full teaspoonful of saline laxative (effervescent magnesium sulphate). Small children should take this in the form of "lemonade," a little at a time. Use a little lemon juice and sweeten with saccharin. Every three hours thereafter 2 to 5 grains of the sulphocarbolates (the mentholated tablet in solution is best), giving *enough*. The stools will become black and gradually resume the normal color; at first they will be fetid but later odorless. Sponge the patient, part after part, avoiding chills, with carbolated epsom-salt solution (proportions already given), and if fever is high, give one-half-strength defervescent compound granule to a child of five or over every hour for three doses, then every two hours till the fever falls and skin is moist.

Do not try to reduce an elevated temperature, unless excessive, until the bowel has emptied and the sulphocarbolates have been given three times. If diarrhea is profuse give half to a whole zinc and codeine tablet every four hours, and twice daily a warm enema: water, two pints, sodium sulphocarbolate, 20 to 40 grains. Nuclein, ten

drops three times daily. On the third night repeat the calomel, etc., unless the case is well in hand. It is wise to give three or four times daily quinine arsenate, gr. 2-67, hydrastin, gr. 1-6. That is all the ordinary case will require, and even the extraordinary case (under old-fashioned treatment) will become ordinary in twenty-four to thirty-six hours, treated as above.

Of course peculiar symptoms will call for peculiar remedies. Cactin and strychnine if the heart and vitality fail. Echinacea if sepsis is marked (gr. 1-2 to gr. 1 four times daily). Baptisin in the rare cases where even more profound sepsis exists—the breath is sweetish and yet sickening, the edges of the tongue and buccal mucosa are purple, while down the center of the tongue a thick, pasty streak presents; the patient is semicomatose. Here gr. 1-6 or even double the amount must be given every hour for three hours, then every two; echinacea and the sulphocarbolates being pushed meanwhile. Atropine where there is internal congestion with high rectal or buccal temperature, cool skin, cold extremities and pinched face. Give gr. 1-500 with a little hot water, half the dose half an hour later, and then cactin and strychnine to maintain even circulation. Sulphurous acid will occasionally turn the tide in low septic conditions—there is great debility, highly colored, scanty urine, temperature of 104° to 105°F., a tongue which can hardly be protruded and covered with a brownish red fur like bad meat—give 15 to 30 minims in half a glass of water every two hours and sponge the patient as often; decinormal salt-solution enema every four hours—give it cool however, not cold. These patients require nuclein, twenty drops hypodermically. The only chance that the alkaloidist has to see such a case is after someone else has dropped out—or needs help. For tympanites give oil of turpentine, gtt. 5, in capsule, or better, oil of cajeput, gtt. 2, on a little sugar; apply hot stupes also. The "calmative"

formula is superior to either. Caffeine valerianate in extreme nervousness, gr. 1-6 hourly, "to effect." Albumen water (the white of a fresh egg stirred in a glass of water) if nausea or intestinal intolerance is a feature. In many cases this and barley water are the safest things to give for a few days. Prepared ox-blood may be added with safety.

Convalescence.—Injudicious feeding often is the cause of relapses. Go very slowly, adding first broths, thin gruels, and the proprietary prepared foods, with sago, tapioca, well-cooked rice, macaroni, etc. Cooked fruit is desirable and may be given with cereals. Poultry, fish and a little red meat may come next, but bread, pastry and spiced or greasy dishes must not be given for a month. Milk at this period is excellent in any form.

Quassin, gr. 1-12, or hydrastin, gr. 1-6, with juglandin, gr. 1-6, and brucine, gr. 1-67, are the best bitter tonics; calcium lactophosphate will aid cell repair; the sulphur laxative (2 to 3 tablets after meals) will insure regular stools and improve intestinal tone generally. The "triple arsenates with nuclein," one or two after each meal, have proven in my hands *the* reconstructant *par excellence.*

CEREBROSPINAL FEVER (EPIDEMIC)

Cerebrospinal meningitis is one of the most fatal diseases which we have to encounter. It is not seen so frequently in the country as in crowded districts and among the illy nourished and poorly housed. From time to time however it breaks out where least expected and carries off children from the most carefully guarded homes. The diplococcus intracellularis meningitidis is the undoubted cause. The mode of entry is unsettled, but it is supposed that it gains access through the cribriform plate; at any rate, the organism has so often been obtained early from the upper nasal passages that it would seem positive that

this is the point of infection. The disease does not seem to be contagious, appearing at long intervals in the larger cities and disappearing as suddenly as it came. In remote hamlets one, two, three or half a dozen cases will be seen within a few days and then for years there will be no sign of the disease. In the winter or early spring months epidemics are most likely to appear; in the hot months there is almost a total dearth of cases. Children under two years of age are not subject to the infection and one child may be stricken in a large family without any other member suffering

The changes found after early death are slight: the meninges are inflamed, there is some serous exudation, and the cerebrospinal fluid is turbid or flocculent, there is also an increase in the amount. If the patient live more than three days, quite uniform lesions are found at autopsy: the ventricles are distended, an abundant greenish fibrin is distributed over the base and anterior part of the brain, serum or sero-pus distends the ventricles, and the substance of the cortex is more or less reddened. Minute hemorrhages or even abscesses are found in the superficial layers, and cell-infiltration is marked. Changes in the cord are similar to some extent, but not as well defined. Enough has been said however to show conclusively that almost any treatment may prove useless, it being practically impossible to limit the infection before destructive changes have occurred in a vital center. Epidemic cerebrospinal meningitis is known in some parts of the country as "spotted fever," but this term in the West describes mountain-fever, an entirely different disease (which see).

The disease may come on with lightning-like rapidity —hyperacute or fulminant form—a child for instance being well at 9 a. m., having nausea and headache at 11 a. m., some fever and vomiting at noon, becoming weak, semicomatose and with a temperature of 104°F. by 3 p. m.,

opisthotonos marked and temperature of 105°F. at 6 p. m., coma deepening and petechiæ noticeable over the face and neck at 9 p. m. (temperature—rectal—106°F.), death at 2 a. m., preceded by convulsion. This case occurred in my own practice, and though everything possible was done (even to intraspinal injections of creolin and intravenous injections of colloidal silver) it was impossible even to limit the severity of the disease.

Other cases—*ordinary form*—present the following phenomena: Headache, frequent vomiting, increasing fever; prostration is very marked and partial insensibility may present by the second day; there will be evidences of brain involvement before this, perhaps convulsions, delirium, hyperesthesia, opisthotonos. The temperature early may be 101°F., but it gradually rises to 104°F. The child complains of severe pains in the head and back of neck, and often it bores its head into the pillow. Rigidity is quite marked in the ordinary cases, though in the fulminant type relaxation is as often noted. There will be a pulse-rate of 120—160, but it is extremely irregular. The respiration at times is shallow and quick, at others stertorous and tardy.

The typical eruption may appear or only a few spots will present; sometimes none whatever can be found. Tremors will be noted from time to time as the disease advances. By the fifth or sixth day the child will be rigid —resting upon the side with arched spine and flexed extremities—the bowels are constipated, vomiting is constant and prostration and loss of weight progressive.

At times remissions will lead one to hope that the worst is over, but in a few hours an exacerbation will threaten life. This sort of thing may continue from two to four weeks when, if recovery is to occur, there is a gradual abatement of all symptoms—the fever falling, the mind clearing, and food being retained. Finally, the child,

weak and limp as a human body can be, lies convalescent. Cases running a febrile course of six to eight weeks are reported: I have not encountered any. It is not safe to consider the child well until the temperature has rested at 99°F., for several days, with the mind clear and perfect freedom from rigidity and vomiting.

Death, when it comes in the middle period, occurs during coma or after a convulsion; heart failure may cause death at any time; occasionally pneumonia hastens the end.

If these perils are avoided and the case runs three weeks, or four, sheer exhaustion may cause death. The patient is merely the shadow of a child, lying relaxed (or tense as a bow-string), with sunken abdomen and fleshless limbs, unconscious, feebly breathing and with sores (herpes) surrounding mouth and nose. The pulse can hardly be detected, the tongue is brown and dry, the eyes turned up so that the whites alone show. Here death comes suddenly and quietly—or with a last convulsive quiver. Strabismus, nystagmus, facial contortions, and paralysis of various muscle-groups may have occurred earlier; in fact, it is hard to say what may not occur during a prolonged case of cerebrospinal meningitis.

In all cases the urine is scanty, highly colored and full of glucose, Kernig's sign is constant: Babinski's reflex (extension of the great—and other—toes on tickling the sole) not always to be elicited. The reflexes generally are markedly exaggerated.

An *intermittent type* is seen in which the temperature chart resembles that of pyemia; chills and drenching sweats may occur also.

Finally, an *abortive form* presents occasionally toward the end of an epidemic. Here the classical symptoms are present, but just as the disorder seems at its height a sudden change takes place and within twenty-four hours the patient is evidently on the way to an early recovery.

In epidemics diagnosis is easy, but in sporadic cases one must trust to the severe headache, high fever, stiffness of neck-muscles (opisthotonos), Kernig's sign, presence of petechiæ, tremors, and early delirium or coma. Lumbar puncture will confirm the diagnosis: 2 to 4 drams of spinal fluid should be withdrawn, which will be found turbid (sometimes pus and blood are present), and the microscope will reveal the meningococcus in most cases.

Lumbar puncture is easily performed anywhere. Strip the patient's back and place him with knees well drawn up on the right side, left shoulder to the front. With an aspirating needle, well sterilized, penetrate the canal between the third and fourth or fourth and fifth lumbar vertebræ. The needle is directed upward and inward, puncture being made one centimeter to the side of the median line exactly midway between the processes. At two centimeters in children (or a little deeper) the canal is entered, and the fluid should exude drop by drop. If failure occurs, withdraw the needle and make a fresh puncture. The fluid should be caught in a sterile test-tube. It may be necessary to clear the lumen of the needle. At this time it is well to inject 2 to 3 drams of a 1-percent lysol or creolin solution—or as much fluid as has been withdrawn. (See treatment.)

Treatment.—In the fulminant form it seems almost impossible to accomplish much—time is not given us. However the bowel should be flushed and elaterin, gr. 1-67 to 2-67—or elaterium, gr. 1-6—given half-hourly for three hours; as it is being taken give saline laxative draughts *ad libitum*. Every hour give calcium sulphide, gr. 1-3 (two granules), and echinacea, gr. 1. Gelseminine, gr. 1-500, every thirty minutes for four doses, then hourly till temperature falls. It is important that meanwhile the patient is in the wet-pack. Wet the sheet with a carbolated saturated solution of epsom salt and get the

patient into it at the earliest possible moment. Medicines are given while the patient is in the pack. Ice-coils are applied to the head, hot water-bags to the feet. A full dose of pilocarpine may be given hypodermically as soon as the child is in the pack. After two hours remove the patient (unless the bowels are moving freely earlier), rub thoroughly with a rough towel and place in a clean bed.

After the patient has been made comfortable proceed to do lumbar puncture, and after withdrawing 2 to 5 drams of spinal fluid inject 2 to 4 drams of a 1-percent lysol or creolin solution at body-temperature: inject it slowly. Rub in over the axillary and submaxilliary glands half a dram of unguentum Credé, or inject intravenously gr. 1-2 of colargol (colloidal silver) in the form of a 1 : 200 solution. I do not hesitate to use both measures. If lumbar puncture cannot be done, repeat the injection in twelve hours. Some remarkable results have followed the use of colloidal silver.

It is best to choose rather carefully between aconitine, veratrine and gelseminine. In markedly sthenic forms aconitine and veratrine will be given alternately, or together even, in fairly full doses "to effect;" in asthenic conditions gelseminine and cicutine hydrobromide—given with due care—will produce better results. Small quantities of very thin gruel with barley water, milk and vichy, the prepared blood-foods or grape juice may be given—iced usually. Nuclein here is of paramount importance: twenty drops may be given and allowed to be absorbed from the buccal mucosa every four hours. If the heart wavers, cactin (gr. 1-67) will promptly improve its action.

Nothing more *could* be done for any patient than is here suggested, and if the case can be seen soon and treatment is properly and boldly carried out at least one-half of even the severe cases should be saved, but too often death is imminent when we reach the bedside.

The Moderate Form.—Here practically the same treatment is indicated, but we have time to get results, and usually in two to three days we have control of the case.

Elaterin need not be used. Blue mass and soda, gr. 1-2, podophyllotoxin, gr. 1-12 half hourly for four to six doses being efficient. Wash the bowel out *first*, and every eight or ten hours subsequently. Saline laxatives as before. The wet-pack as needed, and inunctions or injections of colloidal silver once or twice each day, as symptoms may demand. I believe I saved one child's life with inunctions of modified mercurial ointment over the entire scalp (head shaved) and down the spine. Gelseminine and cicutine control spasm and photophobia; it is well to give fairly full doses at half-hourly intervals "to effect," then stop.

If lumbar puncture is done, inject the creolin solution; if the case assumes a more serious aspect, do it anyhow. If vomiting is frequent, feed per rectum peptonized milk and bovinine, and give fresh beef juice, panopepton, etc., with cracked ice, by mouth, if tolerated. Cold barley water with lemon juice *ad libitum.*

The buccal cavity and nares must be kept as nearly aseptic as is possible: use any effective alkaline antiseptic freely with atomizer. In every case give one of the sulphocarbolates—or the triple salts—to secure a clean alimentary tract.

Treated thus, most curable cases respond within the first week and it then only remains to prevent relapses and support vitality. Nuclein, calcium sulphide and echinacea will have to be continued; epsom salt sponging, the daily saline laxatives and enemata will usually keep the temperature down to below 100°F. Colloidal silver ointment is rubbed in daily. Cicutine and gelseminine are used if spasm and fever recur. Absorption of exuded material is hastened the moment the acute stage has passed and nothing works as rapidly as this formula: Mercury binio-

dide, gr. 1-67; iodoform, gr. 1-6; phylotaccin, gr. 1-3; arsenic iodide, gr. 1-67; rumicin, gr. 1-6. This should be repeated every three hours till slight signs of iodism or arsenic sufficiency are observed. Under the conditions tolerance is remarkable. Children under six, half dose.

The physician who has tried old-fashioned methods with horrifying results may institute these measures with the assurance that they will prove successful in the majority of cases. Every procedure is based upon a clear conception of the pathological conditions present, and as we have to do exactly the right thing at the right time (and several things together) in order to save life, empiricism or experimental medication is worse than useless—it is criminal!

The *convalescent stage* requires close attention. Fresh air (change of scene), forced nutrition and massage are essential. A bitter tonic—quassin, juglandin, hydrastin—will be required for some weeks, before each meal, and the arsenates with nuclein (two granules) should be given after food. Calcium lactophosphate, gr. 1-3, may be given three times daily with cactin, gr. 1-134, and sanguiferrin, one dram, will be exhibited with meals. Digestion often is unsatisfactory; if it is, papayotin, gr. 1-3, should be exhibited with the arsenates. Cascarin will prove a good laxative, though the anticonstipation formula is unquestionably often to be preferred. Do not give too much strychnine. If extreme nervousness or sleeplessness exist, push avenin and scutellarin for a week or two.

In conclusion, let me urge the physician *not to use opiates* at any stage unless he has decided that death is inevitable—and we have no right to assume such a thing while there is life.

SPOTTED FEVER (MOUNTAIN-FEVER)

Mountain-fever is as yet not thoroughly understood and the treatments which have been recommended are many.

Young adults are the usual victims but children from eight years upward have contracted the malady. It seems to be spreading. Cerebrospinal meningitis is an entirely different malady. I have not personally treated or seen a case but from several correspondents have gained a fairly clear idea of the conditions prevailing and upon this have formulated and suggested a course of treatment which has proven very satisfactory where adopted. Physicians have reported cure after cure, whereas formerly they were helpless. Careful observation and further reports are needed. The disorder is met with in Idaho, Wyoming, Nevada and Montana chiefly, but the Indian Territory and Oklahoma have also reported cases. Those who are among cattle or breaking new uplands are liable to be affected. It is supposed that the pyroplasma hominis is the invading parasite. A tick (dermacentor reticulatus) bites the individual and conveys the organism.

Three to ten days after inoculation, during which time there is more or less malaise and chilliness with some nausea, the disease sets in with a sharp chill and rigors. Within a few hours the temperature reaches 104°—105°F., increasing till by the sixth or seventh day it may reach 107°F. in the evening. The temperature always falls about a degree during the night. There is marked body-pain during this period; nausea, constipation, giddiness and epistaxis are common symptoms, especially about the second week. The tongue has bright-red end and edges and a thick, narrow streak of fur down the center; the dorsum is coated also. Urine scanty; liver and spleen enlarged; conjunctivæ slightly jaundiced; frequently bronchial symptoms develop, and in some cases a typhoid stupor sets in. On the third to sixth day the eruption makes its appearance: bright-red circular spots show first upon wrists, ankles, arms and back, spreading thence to the body, forehead and lower limbs, the abdomen being affected last,

if at all. The pulse is shallow and fast, respirations hurried —60 or more per minute—at this time. Upon pressure the patient complains of tenderness of the affected skin. Quite early the spots disappear under the finger, but later are stationary. The petechial character is also lost, the skin assuming a blotched purplish tinge. After a few days the spots begin to fade, disappearing as desquamation sets in —at the end of the second or beginning of third week. Well-defined icteric areas may exist about the joints and genitals.

The *prognosis* is not good in the severer forms, especially among children. The mortality hitherto has been from 75 to 80 percent, death occurring after the fifteenth day as a rule.

Treatment.—Strong carbolated epsom-salt solution will neutralize the tick bite. The insect is first gotten rid of by applying kerosene liberally, the bite is then touched with pure carbolic acid and a compress wet with the epsom-salt solution applied. Calcium sulphide and quinine arsenate in full doses are taken for twenty-four hours by those bitten. If the disease makes its appearance, give gr. 1-4 to gr. 1-2 of calomel and gr. 1-6 of leptandrin or iridin hourly for four doses (in children) and follow with a full ounce of castor oil. Repeat the second night. Quinine salicylate, gr. 1-6, every two hours, calcium sulphide, gr. 1-3 every hour, echinacea, gr. 1 every two hours, with pilocarpine, gr. 2-67 (hypodermically) morning and night, for the first two days. Frequent sponging with the magnesium sulphate solution is a necessary feature. Light fluid diet only is allowed, and iridin, gr. 1-6, is given before food, the sulphur laxative (2 to 3 granules) after eating. Nuclein, 6 to 8 drops, may be exhibited morning, noon and night. Treated promptly thus the infection dwindles in two or three days and at the end of a week the patient is weak but well. If fever is troublesome, aconitine should

be given "to effect," repeating as necessary. The regular tonic treatment should be given during convalescence.

TYPHUS FEVER

This disease is practically unknown in this country and thus requires no extensive notice here.

MALARIA

One of the most common of the infections in many parts of the country, entirely unknown in others. The symptoms vary remarkably and in young children may hardly be alike in two instances. Older children present the classical symptoms so well known. Malarial and typhoid infections may coexist, while another variety of the malarial parasite causes the estivo-autumnal form, which is characterized by a most irregular fever.

The hæmocytozoon of Laveran, or plasmodium malariæ, is the causative organism, and an examination of the blood will always reveal this parasite. The early spring months and August, September and October are the worst periods in temperate climates. Low, marshy regions or the river-valleys are the home of the disease. We know now that the mosquito (anopheles maculipennis) is the intermediate host and the bite of the female conveys the poison. "No anopheles: no malaria" is stated as a fact. (A full presentation of the subject will be found in "A Text-Book of Alkaloidal Practice" or other modern textbooks.) Space forbids more than a mention of the fact that there are three main varieties of malarial fever: tertian, quartan, quotidian. Chronic and pernicious types are also encountered.

The parasite living in the red blood-cells has a regular cycle of development: the *tertian* variety occupies forty-eight hours, the *quartan* (rare in this country) seventy-two hours. It is impracticable to enter here into any explanation of pigmentation and sporulation; suffice it to say, a

most complicated and interesting process takes place in the blood daily (*quotidian*), on alternate days (*tertian*), or every third day (*quartan*), the result of which is "intermittent fever" or "chills and fever." Infection with one or more varieties may cause irregular or continuous fever. It is supposed also that "benign" and "malignant" forms of the parasite exist: the *benign* are said not to form crescents, while the *malignant* do.

It is evident that to put an end to the pathological processes causing chill and fever we must either destroy the invading parasite or put an end to sporulation. It is altogether probable that we do not yet fully comprehend the subject. Men who dig trenches or live in low-lying districts contract chills and fever when no mosquitoes exist. Again, a man afflicted with malaria this year may move to a city, and exactly on time have his typical attacks next year. That the anopheles can and does cause malarial fever is undoubted, but whether the disease can be produced only by the bite of this insect is not so definitely settled.

Symptoms.—These, briefly, may be said to consist of a chill (cold stage), fever (hot stage), and profuse perspiration (sweating stage). The patient between the attacks feels well—is well so far as one can discover. There is however a gradual loss of strength, deterioration of the blood, progressive anemia and debility. Loss of weight is another constant feature.

Daily attacks (quotidian) are commoner in childhood. First comes a chilly sensation with "goose-flesh," then a sharp chill (or convulsion) with perhaps cyanosis and vomiting. We have here a marked cutaneous vasomotor spasm. Yawning, shivering, a sense of discomfort and lassitude may replace the symptoms given. It is a fact that during the cold stage the thermometer in the rectum will register higher than at any other period.

A granule or two of glonoin or gr. 1-1000 to gr. 1-500 of atropine will quite frequently "break the chill" then and there. Especially is this the case if the child has been receiving small doses of quinine (or methylene-blue) for a day or two. After fifteen minutes or half an hour the skin begins to burn and all the evidences of fever present. The head aches and throbs, the "body pains," the tongue is dry and foul, and thirst is marked. This condition lasts for from one to four hours, at the end of which time the skin begins to moisten and finally a profuse sweat breaks out. Intense weakness is experienced which gradually leaves the patient who in another hour or two will be up and about, ready for the next attack.

Often the patient during the chill or fever believes—as may the onlookers—he is dying. The spleen is always enlarged (liver also quite often) and a peculiar cachexia is general. Bilious conditions are always complained of. Very young children may not go through the regular course, they being merely fretful, cyanotic and feverish every day or two. Constipation proves troublesome.

Pernicious Malaria is rarely seen in children—or at all in this country. In all forms the treatment is practically the same.

Treatment.—Give your patients calomel, gr. 1-10 to gr. 1-6, and podophyllin, gr. 1-12, every hour for four doses, every other night, and a saline laxative the next morning. Every four hours have them take 5 grains of the sulphocarbolates in solution. Quinine arsenate, gr. 1-67 to gr. 1-6 (according to age), brucine, gr. 1-67, populin, gr. 1-6, four times daily; iridin, gr. 1-6, fifteen minutes before each meal.

If in a malarial neighborhood, saturate the affected and unaffected alike with calcium sulphide, gr. 1-6 hourly, and rub the exposed skin with a strong solution of the drug. No self-respecting mosquito will lower himself and bite

such a "smelly creature." If he does fall, he will not infect his victim.

If malarial fever has developed—any form—treat as above and note time of attack. For six to eight hours preceding the expected chill give hourly quinine arsenate, gr. 2-67 to gr. 3-67, and every other hour gr. 1-2 of methylene-blue—that's all. When a chill occurs, give atropine as suggested and a *hot* lemonade with gr. 1-67 of pilocarpine. If the fever following reaches 103°F., give, once, acetanilid, gr. 1, and cactin, gr. 1-67, and then gr. 1-1000 to 1-500 of amorphous aconitine every half hour till temperature falls and the headache moderates.

Continue the regular treatment between attacks, sponging the body well morning and night with plain salt water or epsom-salt solution, following this with an alcohol-rub.

As soon as three periods have passed without trouble put the child upon strychnine arsenate, gr. 1-134, quinine hydroferrocyanide, gr. 1-67, iron arsenate, gr. 1-67, capsicin, gr. 1-67, between meals; populin, gr. 1-6, and euonynim, gr. 1-6, before each meal, and a small saline laxative each morning. Every third night for a few weeks give one calomel, podophyllin and bilein tablet—one-half tablet for children under six.

ACUTE RHEUMATISM: RHEUMATIC FEVER

We have fortunately found a perfect treatment for this condition, even though we are not definitely able to explain its origin. It is not contagious but may be (probably is) infectious. The lactic-acid theory of its origin is no longer tenable, and though often caused by cold and dampness it may make its appearance in mild, dry climates. The entrance of an unknown organism into a patient whose metabolic processes are deranged may be accepted as the cause. Nervous disturbances are caused by the disease but do not cause it. One attack predisposes to another and

after a second attack a child is materially damaged generally. The joints suffer principally, one after another becoming affected. The synovial membranes swell and become hyperemic and effusions into the joints occur. Fever, intense pain and sweats are constant symptoms. The perspiration of children does not smell as sour as that of adults and the attack is shorter.

The onset is sudden or there may be a few days of malaise and constipation with loss of appetite. Some tonsillar affection may first attract attention or sharp pains about the heart be complained of. Finally one joint—the knee oftenest—becomes red and swollen; fever is constant and the child is restless, irritable and sleepless. The ankles, wrists and fingers are next involved, or only the lower or upper extremities may suffer. In children under five articular rheumatism is not commor. at all, under three it is almost unknown. Anemia is almost always a feature, and various nervous phenomena exist, such as nightmare, chorea, extreme nervousness and even petit mal. Various eruptions are seen (autotoxemia?) and purpura occasionally develops. Nodules form under the skin but rarely attain much size; they vanish as the health improves; the most frequent sites are along the tendons and wherever the bone is covered with skin alone.

The heart is affected in nearly all cases: functional disorders are of no great moment, but endocarditis and pericarditis may exist and escape attention. Most valvular lesions can be traced to an acute attack of rheumatism. The attacks last from ten days to three weeks; recurrences are probable unless surrounding conditions are changed. I have lately treated three children in one family; four other children constantly with the patients and living under exactly the same conditions escaped. It is not easy to explain all this. The diagnosis is not always easily made.

Treatment.—Put the patient to bed and dress in flannel. Apply carbolated epsom-salt compresses to the affected joints (hot or cold, as may give most relief), cover with rubber tissue and change every three hours. Sulphur may first be dusted thickly over the parts, or carbenzol rubbed in thoroughly. Blue mass and soda, gr. 1-4, colchicine, gr. 1-134, every hour for three doses every night for three nights, and a teaspoonful of salithia the next morning will be the only purgatives needed. Bryonin, gr. 1-67, macrotin, gr. 1-6, eupatorin, gr. 1-6, four times daily between meals, one-half tablet of calcium carbonate compound with water three times daily and 5 grains of the sulphocarbolates (in solution) every four hours while awake, will complete the medication.

Sodium salicylate, aspirin or salol may be given alternately with calcium carbonate, day and day about. However in my own practice, I find the "rheumatic-Candler" formula superior to the salicylates alone. It may appear a "shot-gun" affair but it meets several symptoms and has proven effective enough to cause an enterprising firm to offer it as a well-advertised "proprietary." The formula reads: Salicylic acid, gr. 2-3; calx iodata, gr. 1-3; colchicine, gr. 1-250; bryonin, gr. 1-134; macrotin, gr. 1-12; boldine, gr. 1-67; oil of wintergreen (true), min. 1-4. Half to one tablet is given with a few swallows of hot water every three hours (in place of the other medicines mentioned), and relief will be obtained within forty-eight hours. A study of the formula will reveal its applicability to the conditions which have to be met. Salithia and calcium-carbonate compound are also given (see above), and the mercurial is exhibited at night, always. The epsom-salt solution is also applied freely in every case.

Diet must be light; milk is not at all desirable; clear soups and thin gruels with fruit juices, fish and a little poultry may be allowed. Vichy or apollinaris will be grate-

fully accepted by the patient. The bed should be in a well-aired, sunny room and quiet should be maintained.

CHRONIC RHEUMATISM

The treatment of this disorder in children is similar to that for adults. The technic, together with a rational presentation of the causes of rheumatism, will be found in the larger alkaloidal works on "Practice."

ACUTE BRONCHITIS

Acute bronchitis—the every-day "cold"—is a common affection among children, "especially during their first dentition." This statement from a modern textbook on childrens' diseases may fairly apply outside the large towns and cities, but the practician, familiar with urban conditions, would make it read, "throughout the entire school-life."

The modern city child—often none too well blessed with stamina to start with—is housed, as a rule, in a small, poorly ventilated, superheated (or freezing) flat or apartment. Even though he inhabit a separate house, the air he inhales there will usually be none too pure. Rising in the morning, after a hurried breakfast (half masticated), he leaves the house for school. On the way he may be subjected to the foul, germ-laden air of the street-car or, more fortunate, may arrive at his class-room merely cold or with wet clothing and soaked feet. In the latter condition, for three long hours, he will tax his vitality while "drying out," meantime breathing again a superheated, deoxygenized atmosphere.

Noon arrives and he rushes out precipitately into whatever climatic conditions prevail locally. Cold or wet once more, on arriving home he sits down to a heavy meal, which he rapidly devours and then, again facing the elements, he hurries back to school. Two more hours of study and

"drying out," and for the fourth time in twelve hours the growing child hastens from a hot, close room into the outer air. Another wetting perhaps going home and then an evening spent in the unhealthy air of the gas-lit flat.

Is it not natural that we have coughs, colds, and other more serious diseases to contend with? Is it any wonder, moreover, that, treated improperly, these first "coughs" and "colds" develop later into the pneumonias and consumptions which take such a terrible toll from the human race?

That it behooves the family doctor to know how to treat these conditions goes without saying, and yet, many men are satisfied to prescribe an opium-bearing cough syrup or dispense some much-lauded tablet which is guaranteed by the manufacturers to "cure any cold within twenty-four hours?"

Even the more thoroughgoing physician is likely to look upon an "ordinary cold" as a trivial affair, and this constant belittling of a really dangerous condition by the doctor has led the laity to go even farther and regard an acute bronchitis as a species of annoying but inevitable discomfort which will finally disappear under a course of hot lemonades and patent "cold-cure" from the corner druggist.

A few moments' consideration of the subject will enable any sensible physician to come to certain conclusions. First, that the "best way to treat" the colds of children is to try to *prevent* them, that is, to impress upon parents the necessity for fresh air, proper food and clothing and protection from wet feet; to see to it that schoolrooms are kept at a proper temperature and well ventilated and that the children themselves are taught (at school as well as at home) to take ordinary care of themselves; further, that children already coughing or showing other unmistakable signs of sickness be excluded from class-rooms and sub-

jected to immediate medical inspection. Much is already being done along this line, but until the profession as a whole awakens to its responsibility in this direction the death-rate among school-children will continue to be appalling.

Secondly, the doctor will realize that even the primary form of acute catarrhal bronchitis may present a varying pathology. The close diagnostician will see in each case something more than "just a cold," and seeing, will probably employ medication differing entirely from the traditional and deadly cough mixture!

Etiology.—A moment's review of the etiology and pathology of the disease may not prove uninteresting here. "Exposure to cold, wet or draughts" is given as the usual cause, but we may safely add, " of those whose resistance is below par or whose system already is influenced by toxins or pathogenic bacteria." The perfectly normal child *may* contract bronchitis from ordinary exposure, but is not likely to do so; but the delicate, overfed (or underfed), improperly clothed girl or boy, subjected each day to the conditions already depicted, is almost sure to—if not one day, then another. Indeed, during the winter or spring months it would be impossible to enter any ordinary schoolroom and not find a very large percentage of the little ones affected with catarrh to a greater or less degree.

That the ordinary "cold" is contagious is denied, but, with our present knowledge of bacteriology, it is easy to comprehend why acute catarrhal conditions prevail steadily among school-children when scattered among the hundred or more in a given room we can detect ten or twenty "coughers" and "snufflers". Of the whole number many get well, others contract chronic catarrh in some of its various forms, and a minority drop out to undergo a siege of broncho-pneumonia, fibrinous bronchitis, lobar pneumonia, phthisis, or some similar serious diseases. *Then* the doctor is called,

and *then* he works; but too often the very conditions which rendered the child an easy subject to primary catarrh turn the balance in favor of the Grim Reaper and once more the little white hearse carries away the victim of modern conditions.

"Inhalation of dust or irritating vapors" is another cause of acute catarrhal bronchitis. The modern furnace carries through the living and sleeping rooms millions of germs from the ground level. The skirts of the female members of the family bring in bacteria and filth from the sputum-spotted sidewalk and later this desiccated dust enters the nasal and oral cavities of the child whose mucosa is already swollen, congested and abraded as a result of exposure. Naturally, we shall have here some form of catarrh—or worse!

If the physician will explain these things and will impress upon the mothers of children to send for him at the first sign of a "cold" there will soon be less victims to respiratory disease—provided, that is, that the treatment is based upon a rational understanding of the pathological conditions present—of which cough is but one symptom.

The ordinary "cold" is usually a tracheobronchitis, complicated, it may be, by an acute rhinitis later; the medium-sized bronchi are involved, and finally—especially in very young children—the smallest tubes become affected (capillary bronchitis). The doctor who has treated a few cases of this disease knows how essential it is that the process shall be stayed in the earlier stages.

Diagnosis.—It is not difficult to make a diagnosis. Upon inspection we shall find the child flushed, with dry lips, somewhat congested eyes and running nose. Cough exists in varying degree of severity and the temperature will ordinarily reach 100°—102°F. Occasionally the thermometer will show 103°F. This invariably indicates extensive involvement of the air-passages or pronounced autotoxemia.

In these cases the tongue will usually be found covered with a yellow coat; the breath will be fetid and the bowels obstinately constipated. In short, we have a bronchitis in an autotoxemic subject. Had the autotoxemia not existed the bronchitis likely would not have occurred. Normal eliminative and calculatory conditions and "colds" do not coexist.

The individual presenting a favorable field for germ propagation is the one who nearly always reaps the harvest of toxins. That the physician should understand this is essential, otherwise his treatment is likely to run along the "anodyne and astringent gargle" lines.

Examination of the upper respiratory passages will reveal a red and swollen mucosa from which issues a serous exudate, mixed with pus-cells, desquamated epithelium and mucus. The respiration is rapid and irregular and upon auscultation râles, loud and coarse, can easily be heard. In fact, upon laying the hand over the sternal notch the rattling can easily be felt. The head aches, the child complains of being "sore from the cough," and not infrequently vomiting occurs after a particularly hard attack of the latter. Examination of the urine usually reveals marked metabolic disturbance.

In every case the sputum should be examined as soon as the patient is seen, and again after a week if the symptoms have not ceased. In this way the tubercle bacilli (when present) are discovered before much damage is done.

The usual course of an uncomplicated acute bronchitis is seven to ten days, but relapses are frequent, and unless "systemic tone" is improved, one attack is likely to follow another, the child being practically never free from cough or other symptoms of catarrh during the winter and spring months. Here, unquestionably, is the beginning of many cases of phthisis—especially among the children of the tenements who are never free from the presence of the tubercle bacilli.

I shall not attempt to give a description of the various forms of bronchitis. As a matter of fact the treatment which will promptly cut short an acute bronchitis will, slightly varied, more slowly control the chronic or fibrinous varieties. Fortunately we do not often have to contend with the latter disorder, for hitherto the death-rate has been over 75 percent. Modern medicinal measures will undoubtedly eventually reduce these figures one-half.

Occasionally we are called to unusually severe forms of acute bronchitis. High fever, dyspnea, prostration and more or less cyanosis evidence the extent of the disease. Quite often such cases are diagnosed and treated as "pneumonia," but careful auscultation and percussion will serve to show the absence of consolidation. Death may follow, however, the child being unable to void the secretions which clog the bronchi. Success or failure hinges in such cases upon the first twelve hours' treatment. If seen early no case of acute bronchitis should assume the more violent form.

Treatment.—In even simple cases (the "common cold") the first thing to do is to improve the child's surroundings as much as possible. See that it is kept in a well-aired room at 70°F. and explain the danger of sudden changes. Order light but nutritious food, "a little often" being preferable to the three full meals a day usually deemed sufficient. Have the child sponged (in a warm room) with a solution of magnesium sulphate (one ounce to the quart of water at 100°F., adding ten minims of carbolic acid to this amount). Over the upper thorax and throat apply a compress of old linen or lint wrung out of this solution and, over this again, apply a flannel bandage. Change every four hours.

The sponging should be repeated daily for three days. If you have any doubt as to the patient being exposed to draughts, *put him to bed.* At your first visit dispense six half-grain doses of blue mass and soda (or an equal number

of gr. 1-6 tablets of calomel). Three tablets of podophyllotoxin (gr. 1-12) should be left also. Direct one granule of blue mass and soda (or one of calomel) half-hourly till the six are taken, one podophyllotoxin to be added to the alternate doses. A seidlitz powder or saline draught (magnesium sulphate) should follow the last dose; it is best given an hour later. This medication will generally have to be repeated in twenty-four hours. If not then, then on the third day.

Every three hours the child should take gr. 1-3 of calx iodata, in powder, washing it down with water. A teaspoonful of a solution of aconitine, gr. 1-134, bryonin, gr. 1-67, apomorphine, gr. 1-67, boiling water, one dram, should be given every two hours for four doses, then every four hours. Enough for one day should be prepared by the doctor in a glass, and to make the medicine acceptable he may add a granule of saccharin and a few mint tablets. Twelve doses of calcium sulphide (gr. 1-6 each) are also left and one dose is ordered hourly.

If the family possesses an atomizer, it should be filled with any good alkaline antiseptic and the mouth, fauces and nares should be sprayed with this several times daily. If no atomizer is available, make up a similar solution in a glass and order the mouth and nose to be swabbed at similar periods. Older children can gargle and use the ordinary "gooseneck" douche with advantage. The main thing is to clear the posterior nares and upper respiratory tract of toxic material.

Quick Response to Alkaloidal Treatment

As a rule, under this treatment, the cough will speedily lessen and temperature fall to normal. It is an excellent plan at the very start to drop ten minims of eucalyptol upon a tin can half full of boiling water and allow the child to inhale the steam through a cone made of cardboard or news-

paper. The water can easily be kept boiling by placing the can upon a small stove. Inhalations should be frequent and last not less than three minutes. If the disease has progressed it may be necessary to add brucine, gr. 1-67 (or strychnine valerianate, gr. 1-134) to the solution of aconitine, etc.

If the heart-action is good, these drugs need not be used. In cases where the secretions are profuse and dyspnea is present atropine, gr. 1-500, and strychnine, gr. 1-67, may be given every three hours for one day. This combination serves to stimulate respiration, and where intelligently used there will seldom be need for more heroic measures. If the secretions are viscid and expectoration is scanty, emetine, gr. 1-67, or scillitin, gr. 2-67, may be added to the above with advantage.

These untoward complications will, however, rarely present when the typical case of acute bronchitis is seen within the first two days and treated as suggested.

The physician must, however, be prepared for any emergency and as a few doses of "the right remedy given at the right time" means success, it is necessary to consider the indications for several drugs. Codeine, gr. 1-34, acetanilid, gr. 1, caffeine, gr. 1-6, will give excellent results when exhibited to older children who complain of pain and carry a high temperature. These patients almost always cough hard and constantly. This combination may be given in place of the aconitine, bryonin, etc., for, say, two doses, and if necessary after that, the two prescriptions may alternate. In nearly every case, however, as soon as the bowel has been thoroughly emptied and the skin becomes active (as it will after the epsom-salt sponge and application of the compress) we shall find the entire train of symptoms improved. Therefore do not be in too great a hurry to alter your medication: proceed as recommended, adding additional drugs only when positively necessary.

If the patient's condition is not what it should be on your second visit you can easily order the change. In all cases as soon as the temperature falls to normal and the skin becomes moist *aconitine should be dropped*. Quite often we shall find patients who seem to be entirely well after three days with the exception of an annoying cough which persists for some minutes, the result being the expectoration of a tenacious phlegm. Helenin, gr. 1-3, emetine, gr. 1-67, hyoscyamine, gr. 1-250, every three hours with a little hot water will prove specific. In addition have the patient dissolve a gr. 1-6 tablet of potassium bichromate upon the tongue several times daily.

As soon as the acute symptoms have subsided pay particular attention to the nares and give your patient an alterative tonic. I have used intranasally for some time—after flushing with an alkaline antiseptic—a solution of camphor and menthol in fluid petrolatum. Under the name of "campho-menthol" this can be obtained easily and, if used several times daily with an oil atomizer will give very prompt and satisfactory results. Five to ten drops of oil of pine needles may be added. There is no reason why this preparation should not be used from the first; if it is, spray the fauces thoroughly, instructing the child to breath deeply at the same time.

The liquor antisepticus of the U. S. P. is one of the best alkaline antiseptics for use before applying the oily solution, gargling, etc., but I have obtained especially good results from a solution of a tablet which contains benzoboric acid, the silicofluoride, sulphocarbolate and bisulphite of sodium with thymol, menthol, hydrastin, and camphor. This tablet (known as menthol comp., Buckley) is easily carried and one dissolved in eight ounces of water forms a standard solution. In septic conditions use two tablets to twelve ounces and add *always* one ounce of glycerin to each eight of water.

As soon as the child is ready to be discharged order the use of these two solutions morning, noon and night, for some time, and place him on the arsenates of iron, quinine and strychnine, with nuclein, one to two tablets, according to age, after each meal. Hydrastin, gr. 1-6, may be added for the first two weeks. If streptococci or staphylococci are persistent exhibit, every four hours: calx iodata, gr. 1; mercury biniodide, gr. 1-67; strychnine arsenate, gr. 1-67; phytolaccin, gr 1-6; nuclein, grs. 2. This tablet is known as calcium iodized and mercury comp. with nuclein. The use of this combination will almost positively prevent subsequent glandular involvement. When used, the triple arsenates are dropped, being given again in place of the other formula after two weeks.

Rachitic or strumous children may be given calcium lactophosphate, gr. 1-3. Thorough elimination must be maintained, the child being sponged from head to foot at least three times weekly. Salines will keep bowels and kidneys active. Under these measures those children who hitherto "have always been catching cold" will pass through the dangerous season entirely unaffected.

Some Additional Suggestions

In severe cases, where secretions are abundant and the expectoration scanty despite treatment, push lobelin and pilocarpine to effect, guarding against depression by moderate doses of strychnine. Have the room kept filled with medicated steam, and every hour or two apply compresses wrung out of hot epsom-salt solution to the throat and upper thorax.

Extreme edema of the mucosa will yield to spraying or swabbing with a 1 : 5000 solution of adrenalin chloride.

A few doses of camphor monobromate and cypripedin will quiet a dry, "racking," nervous cough and, if gr. 1-12 of codeine be added a quiet sleep will usually follow.

Eucalyptol (gtt. 1-2) or oil of turpentine (gtt. 1-2) on sugar are excellent stimulant antiseptics. In threatened capillary bronchitis give antimony arsenate (gr. 1-67) with scillitin or sanguinarine, always watching the heart and pushing camphor with cactin at first sign of cardiac wavering.

In many cases there is a malarial undercurrent; the exhibition of quinine arsenate will suggest itself; gr. 1-6 four times daily will prove efficient.

Never forget that a full stomach is undesirable in acute bronchial catarrh; give small quantities of highly nutritious, easily assimilated food often. Fruit juices *ad libitum*. Barley water is the best beverage. Impress upon the mother or nurse the importance of an active skin. If possible, see the first sponging given and teach the value of brisk rubbing afterwards.

If you do not find your patient responding to medication as he should, take the trouble to see whether everything which should have been done has been done. Many a case "hung on" because the bowel has not been thoroughly emptied, or the nares and fauces have been only half cleansed. *Positive results will almost invariably follow positive treatment—positively carried out.*

Whenever you have occasion to treat a child with acute bronchitis make the case an object-lesson and talk plainly to the mother, explaining to her how and why children contract the disease and how she may lessen the danger. Above all, teach her the folly of "home treatment"—the use of teas, syrups and patent nostrums. Explain to her the few simple steps she may take should her children "catch cold," and urge her to lose no time in sending for medical assistance. If it is apparent that you can control coughs and colds and your clientele understand that even such "common diseases" may prove fatal in one way or another, rest assured you will be kept busy. Moreover, you will get your cases early, which means everything!

CATARRHAL CROUP: TRUE CROUP

There is a most unfortunate difference of opinion as to what constitutes *true croup* as distinguished from "false croup," spasmodic croup, laryngismus stridulus, and fibrinous croup (fibrinous bronchitis). Holt gives an excellent description of croup under the head of "Catarrhal Spasm of the Larynx: spasmodic croup; catarrhal croup (sometimes improperly called laryngismus stridulus)." Wilcox promptly falls into error and adds "false croup" to the nomenclature, calling true croup "diphtheria." Holt recognizes a "bronchial croup"—fibrinous bronchitis (really fibrinous or membranous croup), which he says is "very rare in children;" a "catarrhal croup" (an excellent description of true croup without any mention of the croupous membrane—non-diphtheritic—which so often is expelled with instant relief); a "true or membranous croup" (really laryngeal diphtheria as described); and "spasmodic croup" (same as catarrhal croup). Holt, in speaking of membranous croup as "laryngeal diphtheria," says: "Membranous inflammation is almost invariably true diphtheria, i. e., due to the Klebs-Loeffler bacillus."

Thus nearly all writers blithely have a "false croup" which is "always diphtheritic" (?); and a spasmodic variety which may or may not be "laryngismus stridulus." None of them seem to have seen a child well in the afternoon, hoarse in the evening, waking suddenly in the night with frightful dyspnea, croupy cough, growing cyanosis, and all the other *horrible symptoms of true croup* (as distinguished from the simple spasmodic variety—which is bad enough), and presenting on careful examination a *false membrane the expulsion of which affords instant relief:* the whole train of symptoms gradually disappearing and a return to normal conditions ensuing—without systemic disturbance—within two days!

This is not diphtheria—there are no systemic disturbances —it is an acute catarrhal affection, an *acute laryngitis*, with croupous pseudo-membrane formation, and it destroys children, with horrible certainty and rapidity, all over the world, whereas simple spasmodic croup does not; neither does laryngismus stridulus (child-crowing), which is purely a nervous (reflex) disorder.

As this is a vital matter it seems well to dwell for a moment upon the subject.

Graetzer-Sheffield's "Practical Pediatrics" says: "A primary tracheal and laryngeal inflammatory croup undoubtedly exists—croup may begin with a bronchial catarrh and become suddenly complicated by fibrinous tracheolaryngitis—ascending croup. In speaking of the treatment of "spasmodic laryngitis—croup", these writers also say: "The threatening symptoms usually subside provided œdema glottidis, or fibrinous *exudation*, does not set in, i. e., if *pseudomembranous fibrinous laryngitis* does not develop, which unfortunately is often the case."

It is quite evident that these men have seen some few cases of "true croup" and know how futile would be the treatment for diphtheria—especially the injection of serum! I am quite convinced that some of the men who write books have never in their lives been called to a real case of pseudo-membranous croup. If they have, the children must have died and the end probably was attributed to "œdema glottidis" or "respiratory and cardiac failure."

Ellis, in his "Diseases of Children," is aware of this dangerous error, for he says: "Similarity of cases here and there does not remove the great, broad line which, looking to the totality of the symptoms, seems to me to run plainly enough between the two. In *diphtheria* the exudation is formed upon the tonsils and pharynx and spreads downward and upward, whereas in *croup* I recognize a disease sporadic, and doubtfully if at all contagious, of a sthenic

character at first, in which not the tonsils and pharynx but the larynx and trachea are the parts attacked first."

These unanswerable arguments together with the fact that proper treatment (e. g., the use of apomorphine, lobelin, and calx iodata) has enabled men, who formerly lost nine out of twelve pat ents, now to save *every one*; the total absence of systemic toxemia (always evident in diphtheria, which is a systemic disease); and lastly the short course of the disease (perfect recovery or else death occurring within twelve to twenty-four hours) should be proof enough that a true non-diphtheritic croup does exist. Moreover, there are "croupy children" who may have acute attacks twice, thrice, or oftener in a year, or every year for two or three years. Diphtheria does not appear in that guise.

I, together with my associates, have so long fought this fight that I feel that every physician at all familiar with alkalometric literature knows a case of "croup" when he sees it; that he knows, moreover, how to cure the child.

Symptoms.—The writers who describe "spasmodic laryngitis" (subheading "false croup") give a very fair clinical picture of the real thing—*only they ignore the pseudomembrane*, thus leading us to infer that wherever a membrane exists we have a true or "diphtheritic" croup.

A child hitherto well or perhaps known to be "croupy," may have played all day out-of-doors and toward evening possibly coughed a little and appeared hoarse. As the night grows and bedtime comes there is a whistling, wheezing respiration and the voice is almost lost. The parents either rub his throat with an embrocation and give goose-grease or alum and honey, or put him to bed untreated, looking upon the symptoms as those of a "mere cold."

Suddenly, after a few fits of coughing in his sleep and stertorous, rattling breathing, the child awakes crying and choking. The cough now is short and decidedly "croupy" (not metallic and ringing as in laryngismus stridulus), and the wheezing is loud enough to be heard outside the room. The face is cyanosed, the temperature rises to 101° and 102°F., and the pulse is rapid and thin. The eyes, at each paroxysm, are suffused and protrude; the child struggles for even a breath of air, and the rattling and whistling in the throat (as efforts at inspiration are made) appall everyone present. The spasm passes, air enters with a whistle, and the patient sinks exhausted, only to struggle up again in a few moments to undergo renewed agony. Sweat stands out on the face, the lips are livid, and at this stage the abdomen will be found retracted—a marked depression existing as efforts at inspiration are made. More air leaves the lungs than enters them, and serum begins to accumulate (owing to the suction) in the bronchioles. Now serous râles are noted and cyanosis deepens; asphyxia threatens, the pulse becomes irregular and the eyes glassy and staring. Another spasm or two, and the child lies blue and quiet—death from asphyxia (carbonic-acid poisoning) approaches.

It is at this stage that the impotent physician resolves to quit practice; it is when mother and friends beg him to "*do something*" that tears fill the helpless doctor's eyes and—he either hurries away resolved never to go to a croup-case again or—does a tracheotomy or intubates. In *his* hands medicinal measures have failed.

If the case is not quite so severe, relief gradually comes with morning and during the day the child may be hoarse and cough often, or may be nearly normal. As night returns the former symptoms also reappear, and this time the end will be nearer. Sometimes the membrane is coughed up—even on the first night—while in a few cases

recovery comes slowly without the membrane appearing, although a stiff phlegm is expectorated after each coughing spell. *This is true croup*—the croup that has killed, and will kill, alas! its thousands; yes, and the croup that can positively be controlled in nearly every case.

Treatment—If seen early, give hyoscyamine, gr. 1-500, lobelin, gr. 1-67, emetine, gr. 1-67, every two hours, and calx iodata (in *hot* solution), gr. 1-3, every half hour or hour. If early in the evening, exhibit calomel, gr. 1-10 to 1-6, podophyllin, gr. 1-67 to 1-12, every fifteen minutes for an hour, and wrap the throat with three thicknesses of gauze (or a piece of lint) soaked in a cool carbolated solution of magnesium sulphate. Have the child inhale the steam arising from a vessel of boiling water on which ten minims of sanitas oil or eucalyptol have been dropped. Compound tincture of benzoin may also be used. Just as the child goes to bed give a granule (gr. 1-67) of aconitine (or less for a younger child) and gr. 1-24 of codeine. There will be no further trouble that night. The compress must be changed as it dries.

Unhappily we are usually not called till the struggle is on. It is well therefore to instruct parents with croupy children—indeed all parents—what to do at the first sign of trouble.

Called suddenly to a bad case act quickly: give a hypodermic of apomorphine, gr. 1-16, and have someone else crush up and add twelve gr. 1-3 tablets (or five grains of powder) of calx iodata to ten teaspoonfuls of very hot water. Give a teaspoonful every ten minutes. Into another tumbler put five granules each of emetine, lobelin, and two of atropine valerianate, add ten teaspoonfuls of hot water, and give a teaspoonful every half hour. Put a wet compress around the throat and have the child inhale steam, medicated if possible. (See above.) If the heart is weak, add a granule of cactin to each dose

of emetine, etc. If retraction of abdomen is present, give a small dose of morphine, gr. 1-20; this will keep the child quiet and stop the paroxysms. I have had to do this but once, however, the apomorphine acting as a powerful relaxant and the atropine maintaining effect. In desperate cases add gr. 1-67 of strychnine and gr. 1-67 of cactin to the apomorphine—I use here gr. 1-12 of apomorphine for prompt, *sure* results. Relief is usually almost immediate, and under the calx iodata the pseudo-membrane shrivels and is expectorated within two hours. To older children give 2-3 of a grain of calx iodata at a dose. If the child should vomit, all the better.

It may be that you reach the house too late for even these prompt measures to be effective—the child may be only just alive. In such a case either intubate (if you *know* that you know how to pass a tube in a hurry with nervous women to hold the patient) or do a tracheotomy. The latter operation can be easily performed with any small, sharp knife and a pair of hairpins bent to make retractors. Pass both blade and pins through a flame or plunge into boiling water and wipe well on something *sterile*. It is well, when called to a croup-case, always to carry a pocket instrument-case, and an antiseptic. For technic of intubation, etc. (See "Diphtheria".)

Don't leave the patient till you know danger has passed, and believe me, if you pull that child through (as you should) you will have a sense of satisfaction that will be worth more even than the gratitude and esteem of the family. Leave the child on calx iodata, gr. 1-3, every two hours for twelve hours, and strychnine arsenate, gr. 1-134, emetine, gr. 1-67, hyoscyamine, gr. 1-250, every four hours. It is well to give the calomel and podophyllin suggested earlier as soon as the child has had a sleep, following these in two hours with a saline laxative.

Where there is a history of malaise, headache, a high temperature, and evidences of systemic infection, together with (or without) white spots on the tonsils or a highly engorged pharynx, treat as above and add calcium sulphide, gr. 1-3 hourly. Take a throat swabbing, get an early report, and if the next day the child is still ill, you may have to use antitoxin. Of course where diphtheria is even but strongly suspected (history, symptoms) antitoxin should be used promptly, *but*—don't forget that a pseudomembranous croup does exist and is *not diphtheria.*

SIMPLE SPASMODIC (CATARRHAL) CROUP

The symptoms are milder but very similar to those just described. There is more stridor and the cough is more frequent; aphonia is quite marked. The breath is drawn with difficulty, but *there is no false membrane,* and the terrible dyspnea and cyanosis are not present. The child may have an attack which passes off, and sleep ensues for a time, only to disappear as a spasm comes on (congestion is quite marked) with crouping and coughing, wheezing and rattling.

Any attack of simple croup *may* become pseudomembranous, but if treatment is instituted it *never does.* It is usually only necessary to give the calx iodata and lobelin, atropine and emetine; hyoscyamine may replace atropine. The compress and steam inhalations will of course be used.

If relief is not secured promptly (within an hour), give apomorphine as directed earlier. Failing these remedies, antimony and ipecac, each gr. 1-100, may be used. In two cases I secured the most instant results by spraying the fauces with a 1 : 5000 solution of adrenalin chloride and the nares with campho-menthol. In five minutes the child was asleep; calomel and a saline laxative next morning finished *that* case.

Where croup is known to be probable, cresoline should be evaporated in the room, or else sanitas oil on boiling water. Either unquestionably greatly reduces the probability of an attack.

LARYNGISMUS STRIDULUS

Rickety or choreic patients are likely to present this condition. It is distinctly a laryngeal *spasm* from reflex causes. Rhinitis, adenoids, or even exposure may cause attacks. There is no fever, cough or hoarseness (unless catarrh coexists) and the spasms may come on a score of times daily—not *only* at night. However, the child may wake up with an attack. Convulsions may complicate. The peculiar crowing inspiration nd some inspiratory effort are the only symptoms.

Treatment.—Brucine, gr. 1-134, scutellarin, gr. 1-6, avenin, gr. 1-3, every four hours. Very small doses of hyoscyamine (the "calmative" formula) every two hours when the attacks appear. Nuclein, 6 drops twice a day, and the triple arsenates after food—in rickets calcium lactophosphate, gr. 1-6, before food. Keep the child well nourished and sponge with salt water at night. The bowels must be kept open and free from bacteria. In some cases a granule of croton-chloral every hour for three hours gives perfect results. The way to treat the disorder is to prevent its appearance.

OEDEMA GLOTTIDIS

A dangerous but rare condition which may occur in nephritis or as a part of a general edema (cardiac disease); it may complicate an acute laryngitis or be caused by an extension of an adjacent inflammatory process. It comes on occasionally quite rapidly, the patient being able to expire but finding it impossible to inspire properly; each moment the distress increases till a sense of impend-

ing suffocation renders the patient frantic. Adults have been known to scarify their own throats or to thrust foreeign bodies down, with disastrous results. The diagnosis under these conditions is not difficult: examination (ocular and digital) will clear up matters instantly. Cough may be present.

Treatment.—If the patient is far gone and cyanotic or presents a suffused, agonized countenance with injected eyes and retracted abdomen there is but one thing to do—*tracheotomy*. Do not attempt to intubate—you will lose your patient, for obvious reasons. If the patient is still breathing, but with difficulty, spray thoroughly with adrenalin chloride solution, 1 : 3000 (one part of the commercial solution to two of water), apply ice to the throat and give pilocarpine in fairly full dose: gr. 1-10 hypodermically. Leeches are here of service—applied over the larynx—but seldom available. The artificial leech may be used or "wet-cupping" done. Lobelin, gr. 1-3, soon causes relaxation and may well follow the adrenalin and pilocarpine. If a curved bistoury is at hand, wrap the blade to within a short distance of the point with plaster and scarify the edematous area thoroughly. Relief is prompt. Keep cold compresses applied to the throat, and feed the patient per rectum. In scalds or where caustics have been swallowed, tracheotomy alone serves.

BRONCHIECTASIS

A very fatal condition, encountered in anemic children who have had a bronchitis, or in influenza in the syphilitic or rachitic. The bronchioles are dilated and surrounded by areas of inflammation; minute cavities are often present. After death air-filled vesicles are found to stud the surface of the lungs..

Symptoms.—Severe and frequent paroxysms of cough lead to the expulsion of a foul pus. Young children

often swallow this and vomit up the matter later, thus confusing the physician.

Anemia is progressive and the clubbing of the fingers is a peculiar feature. Quite often there is thoracic deformity. Retraction of the wall is often noted. Sometimes the patient only coughs when lying down, the cavities then emptying into the trachea. Occasionally the disease is bilateral. Tubular breath-sounds will be noted and moist râles if there is much fluid present. The sputum on standing separates into layers: pus, fat crystals, Charcot-Leyden crystals, and various bacteria will be discovered in a specimen. There is, as a rule, little rise of temperature and the disease runs a slow course. Tubercle bacilli are not found. The cough, as stated, is of a paroxysmal character and the sputum is copious and thin.

Empyema and phthisis pulmonalis are the diseases most likely to be confounded with bronchiectasis, but a careful comparison of the symptoms will lead to a clear diagnosis. Tuberculosis may supervene or streptococcic infection occur.

Treatment.—Calcium sulphide, gr. 1-6, iodoform, gr. 1-6, strychnine phosphate, gr. 1-134, should be given every three hours. Calx iodata, gr. 1-3, three times daily, with eucalyptol, gtt. 2, and ammonium benzoate, gr. 1-3, may be given on alternate days. Nuclein in full doses for weeks, and if digestion fails, hydrastin, gr. 1-6, before meals, papayotin after food.

Improve nutrition in every possible way, giving the prepared blood-foods with each meal. Guaiacol carbonate and creosotal seem to have given good results; they may be tried in alternation with the above. Inhalations of formalin vapor are of great service. Small portable inhalers are on the market—Leininger Company, Chicago. Inhalations must be frequent. Euarol may

be exhibited in vapor (nebulizer) and various oily antiseptic solutions will prove of service, but formalin beats them all. The chest should be exercised gently by expansion and calisthenics; instruct in deep breathing. Have the skin kept active. Unguentum Credé inunctions are of great use—one-half dram daily well rubbed in.

ASTHMA

Too often every dyspneic condition is termed "asthma." True bronchial asthma is really very rarely seen in children under twelve. If a catarrhal condition of the bronchi coexist then it is proper to speak of the condition as "asthma." The asthmatic conditions due to nervous disorders, indigestion, cardiac disease, or nephritis, should be designated as asthma hystericum, dyspepticum, etc. In each of these cases the removal of the primary condition will lead to a prompt suspension of the asthmatic symptoms.

In *catarrhal asthma* paroxysms of dyspnea occur with fits of coughing; loud wheezing accompanies respiration and the patient is restless and has a sense of impending evil. In certain cases definite actions will produce an attack, as for instance going into the outer air, a hearty meal, drinking cold water, and an inhalation of dust. Children, as a rule, are not as subject to these influences as adults.

The attacks always pass off after a variable time, though treatment lessens their duration and mitigates the severity. It is needless to dwell further upon the symptoms—every physician knows asthma when he hears it. However, it is very essential that he look for the cause: adenoids, nasal spurs, rhinitis, or enlarged tonsils may alone set up the condition.

Asthma dyspepticum will disappear very promptly upon emptying the stomach (with apomorphine) and

putting the patient upon low diet for a few days, with juglandin before meals and papayotin after. The asthma which presents as a result of cardiac, renal or hepatic disorders must be treated *per se* only during the attacks, these being controlled, whatever medication is indicated by the primary disease is exhibited.

The acute stage: Let the child inhale the fumes of stramonium or niter paper. Various asthma cones are on the market: Kidder's or Himrod's are effective. Give promptly hyoscyamine, gr. 1-250, strychnine, gr. 1-134, lobelin, gr. 1-6, and in fifteen minutes give glonoin, gr. 1-250, and apomorphine, gr. 1-67. Spray the fauces and nares with campho-menthol (after douching nose and gargling throat with very hot weak salt solution) and the attack will be controlled. In a few cases (irritable, congested condition of the larynx) scillitin will be more effective than lobelin. As soon as the attack is over give full doses of strychnine and digitalin (each gr. 1-67 t. i. d.) with hydrastin, gr. 1-6, and four times daily exhibit gr. 1-3 of calx iodata. Keep the bowels open with calomel and iridin and a morning saline laxative.

ACUTE CATARRHAL LARYNGITIS

In ordinary cases the symptoms will be hoarseness, some difficulty in swallowing, with distress on speaking, a barking, short cough, which also causes pain, and variable fever, slight aphonia (in very marked congestion) and dyspnea. On examination the vocal chords and visible portions of the larynx will be seen to be red and swollen. It is a disease not very frequently met with and is easily cured save where it follows the exanthemas or occurs in infants at the breast. Acute catarrhal laryngitis is usually described by the laity as a "sore throat." It is not always easy at first to distinguish it from laryn-

geal diphtheria. If there is any sign of a membrane and large submaxillary glands, or albumen in the urine, diphtheria is probable and a culture should be made.

Treatment.—The patient should be kept in a room at even temperature, or better, sent to bed. The bowels should be freely opened with calomel, gr. 1-6, and podophyllin, gr. 1-6, half-hourly for four doses, bilein, gr. 1-12, being added to every other dose. Hyoscyamine, gr. 1-500, amorphous aconitine, gr. 1-500, collinsonin, gr. 1-6, every hour for four to six doses, with potassium bichromate, one granule in solution, and calcium sulphide, gr. 1-6, every hour, will complete the medication in the majority of cases, though nuclein, 8 to 10 drops, should be given three times daily to weak children.

The throat should be frequently sprayed with a solution of menthol compound (one tablet to 12 ounces), following with campho-menthol, while the nares are irrigated with the first-named solution three times daily. If there is the slightest sign of exudation, push calx iodata, 1-3 of a grain, several times daily. Stillingin, gr. 1-6 t. i. d., may be added with advantage.

If the case shows signs of becoming chronic, give two of the "dosimetric trinity" morning and night, and strychnine arsenate, gr. 1-134, potassium bichromate, gr. 1-6, and ammonium salicylate, gr. 1-6, four times daily. A saline laxative every morning.

NERVOUS COUGH (REFLEX COUGH)

Frequently caused by adenoids, glandular disease, nervous disorders, elongated uvula or general relaxation of the mucosa. Heart disease may cause cough and certain disorders of the stomach also are responsible for the symptom. One peculiarity of the condition is that the patient usually coughs worse at night or when unemployed, sharp paroxysms coming on at these times.

Treatment.—Naturally the cause must be discovered and proper treatment therefor instituted. Codeine or heroin, gr. 2-67 to gr. 3-67, and iodoform, gr. 1-6, or the "catarrh bronchial" formula already given, usually will control the cough. Occasionally monobromated camphor, gr. 1-6, and acetanilid, gr. 1-2, will prove more effective. For very young children the "anodyne for infants" acts beautifully. In every case an alkaline antiseptic should be used and the nares and fauces subsequently sprayed with campho-menthol. In purely nervous coughs nothing equals calcium sulphide, gr. 1-6, camphor monobromate, gr. 1-6, Gregory's salt, gr. 1-67. In all these cases look carefully for adenoids and nasal spurs.

BRONCHOPNEUMONIA

The most dreaded disease of the cold months. Children under six years of age are the most frequent patients. Measles, scarlet-fever, ileocolitis, whooping-cough, and even a neglected bronchitis predispose to, and may precede, bronchopneumonia. Pleurisy (which see) often is a complication in the later stages. No single bacterium can be regarded as the causative agent. Streptococci, pneumococci and staphylococci are found either alone or together.

If extensive consolidation exist and the fever is not excessive, the pneumococcus probably is present; if limited (and scattered) areas are affected—and the disease is secondary—streptococcic infection may be presupposed. Males suffer primarily more than females; the inhabitants of "homes," asylums, and crowded tenements are especially subject.

The course is erratic. One part of the lung may clear up and another become involved; one lung may suffer or both—this is usual; and hemorrhages may occur.

Peculiarly, when one side is affected, it usually will prove to be the right apex; when the disease is bilateral, the lower lobes suffer most. It should be remembered that at first there is a general congestion which gradually diminishes, leaving localized areas of consolidation; these usually are small but may coalesce so that almost an entire lobe is involved. Not infrequently the process is similar to that seen in lobar pneumonia, there are, however, in most cases well-defined differences.

In bronchopneumonia the bronchi are filled, in lobar pneumonia they are not. As a matter of fact, the treatment is practically the same, but it is desirable to study the pathology of each disease so as to make a clear diagnosis. The prognosis is not good in very young children; after the first eighteen months of life it is favorable.

Symptoms.—Usually (always in secondary form) the disease comes on slowly. The child coughs; there is fever (at first 100°—101°F.), a rapid pulse, quick respiration, the face is flushed, and every evidence of congestion is present. Nervous disturbances are usual and more or less dyspnea will be noted. Slight cyanosis may be present.

In some acute congestive cases the temperature may range as high as 104° F., after twenty-four hours. The prognosis here is certainly not favorable, though the chance for recovery now is infinitely greater than it was under the old-style method of medication. It is well to remember that in bronchopneumonia râles are present steadily from the first; in lobar pneumonia we find them only quite early and during the stage of resolution. A gradual or, in primary cases, an abrupt onset, distinct, persistent râles, irregularity of fever, involvement of both lungs, slight dulness only and limited fremitus are diagnostic of bronchopneumonia. Crisis does not occur, defervescence being gradual, and the disease may last a few days

or persist for weeks—or even months. Relapses are common. It is well to remember that the physical signs vary greatly in different stages. During congestion the râles are sharp and crackling and lessened breathing is noticeable over the affected area: loud bronchial râles are heard over the rest of the lung. A compensatory emphysema exists here. Where small, scattered areas are consolidated the râles are crisp, the breathing is bronchovesicular and voice sounds are clearly transmitted. General consolidation is marked by bronchial breathing, very sharp crackling and loud bronchial râles, a slightly increased fremitus and moderate dulness. It seems hardly necessary to caution the practician not to overlook such pulmonary disorders, but I have seen two cases in which the vomiting, diarrhea, fluctuating temperature and marked nervous condition which so often exist in bronchopneumonia led the attendants astray altogether. The cough was considered in each instance to be purely reflex. In not a few cases increasing dyspnea and cyanosis alone draw tardy attention to the lungs.

Treatment.—The child should be put to bed in a well-aired room kept at 68° or 70° F. Now that small, effective, portable oxygen generators are easily obtainable it is well, in severe cases, to have one on hand, instructing the nurse to allow the child to inhale for a few minutes whenever cyanosis or dyspnea become evident. Oxygen is a valuable therapeutic agent and only the impossibility of securing it in an available form has prevented the profession from resorting to it largely in diseases of this type. I have used recently Dr. Booth's most excellent little apparatus, which generates pure oxygen only when and as needed; it is easily and instantly charged and a turn of a stop-cock starts generation and gives rise to a steady flow of gas. Another turn shuts everything off till inhalation is needed again. Order for children of four years or under

calomel, gr. 1-10 (with aromatics), podophyllin, gr. 1-67, hourly for four doses, and follow the last dose with a saline laxative. Repeat the latter daily throughout the illness. Older children will take calomel, gr. 1-6, podophyllotoxin, gr. 1-12, at similar intervals. Sponge the body with cool salt water every two hours if the temperature is high, and every hour exhibit aconitine, digitalin and strychnine—"defervescent compound"—dose according to age. Six of the defervescent granules, each containing aconitine, gr. 1-134, veratrine, gr. 1-134, digitalin, gr. 1-67, may be placed in a glass with twelve teaspoonfuls of water (two drams of aromatic elixir may take the place of an equal quantity of water if desired) and twenty to thirty drops may be given at a dose. For young children a quarter-strength granule is prepared and proves very useful. The child should have the chest well rubbed with a stimulating liniment (a mustard-leaf should be applied in severe cases) and then covered with cotton and an oil-silk jacket.

Or apply the glycerinized pastes of the market—not *too* hot or *too* thick—the child cannot breath properly under a load.

If the child is older than one year and strong, substitute veratrine (gr. 1-134) for strychnine at first, but change to the latter at the very first sign of asthenia. I alternate the two. Cactin promptly if the heart wavers, and nuclein from the first hour, 8 to 10 drops three times daily. Surround the bed with a tent made of sheets and with a croup-kettle or a pan half filled with water on a small stove, fill the enclosed space with medicated steam. Kerosene and oil of turpentine, of each a teaspoonful, work beautifully, but sanitas oil has served me well for many years (20 drops repeated every two hours). Cresoline is not as desirable here as steam.

As soon as the bowels have moved thoroughly begin the exhibition of the sulphocarbolates (in solution), giv-

ing as much as is needful in any way you can get it taken. Sometimes a few mouthfuls before a drink, sometimes a single good dose; some children will take the tablet (gr. 1) of sodium or calcium sulphocarbolate best, followed by water, of course. The zinc salt is not desirable alone unless diarrhea sets in.

Small enemata of decinormal salt solution often are beneficial, and I am quite sure that small doses of asclepidin and ammonium benzoate are of service after the third or fourth day. As resolution sets in add sanguinarine.

Change the child's position from time to time and be sure that it gets fresh air to breathe.

If the case drags, alternate creosote (or creosote carbonate) and calx iodata. Brucine, cactin, and quinine arsenate three times daily as the convalescent stage is reached, together with highly nourishing food in small quantities; and *then*, to prevent after-claps, arsenic iodide, gr. 1-67, for several days after food. Maintain elimination and an active skin for at least one month.

For Dietary suggestions see "Lobar Pneumonia."

LOBAR PNEUMONIA (CROUPOUS PNEUMONIA)

This is almost invariably an acute primary disease, coming on with startling suddenness after exposure. After the second year this is the most common form and affects the robust and weakly impartially. In some parts of the country it is known as "lung-fever" and sometimes is termed simply inflammation of the lungs.

One lobe or part of a lobe may be involved; in some cases both lungs are affected (double pneumonia). Not uncommonly, just as resolution is beginning on the side first affected, the other lung congests. When the disease is bilateral, the prognosis must be guarded and great

care must be taken to keep the patient from rising; sudden death has followed sitting up in the bed even.

Fraenkel's diplococcus is known to be the infecting organism. Four quite distinct stages are present in lobar pneumonia, the disease proceeding in the most orderly manner. First, *congestion* exists; then *red hepatization;* then *gray hepatization;* and finally *resolution.*

In the *red* stage red and white blood-cells exude into the air-cells, the red preponderating.

In the *gray* stage the white cells are in the majority; occasionally the lesser bronchi are choked also, and very rarely the larger. The latter condition is termed *massive pneumonia.* The disease ends by crisis or lysis. Crisis is usual. The physical signs which present in the various stages are perfectly described in larger works.

Symptoms.—A chill suddenly is experienced which is followed by a severe headache and a fever which mounts rapidly to 103°—104°F. Delirium is sometimes a feature even at this stage (*cerebral pneumonia*). Respiration is irregular. The initial chill may be absent in young children, and vomiting, diarrhea or convulsions may be features in patients under ten. During the first few days it may be extremely difficult to differentiate lobar pneumonia from bronchopneumonia, meningitis, or a beginning exanthem, for in a great many cases there is no "prune-juice sputum" (it is rare under eight), and the most careful auscultation may reveal no definite symptoms. All this time however the fever is high and cerebral and gastrointestinal symptoms may be marked.

In most cases the pulse-rate—early—will be 130 to 150 per minute, the respiratory 50 to 60. Later, as the temperature climbs to 103°—105°F., the pulse will run 160 to 180 and the respirations average 70 or 80 per minute. This is not a comfortable condition!

Sometimes there will be an abrupt onset—cough, cyanosis, marked dyspnea, temperature of 103°—104°F., rapid pulse, and shallow, quick respiration. The evidences of profound, systemic shock are abundant. The breathing is roughened quite markedly—generally over one side, and pain makes the child extremely fretful. These are the worst cases of all.

During the *stage of congestion* (we may not see it) there will be lessened respiratory sounds over the affected area, with minute crackling râles; coarse bronchial râles over the other portions of chest.

Consolidation will be accompanied by dulness, bronchial breathing, crackling increased fremitus, and loud bronchial râles. When small areas (with sound lung between them) are consolidated, we shall find very limited localized dulness, crackling râles, bronchovesicular breathing, and voice-sounds clearly transmitted.

In making our *diagnosis* we must take into consideration the mode of onset: in lobar pneumonia it is sudden; the fever in bronchopneumonia is irregular, râles are present throughout; in lobar pneumonia they exist early and during stage of resolution only. Affection of one lung is the rule in lobar pneumonia, in bronchopneumonia both are affected *as a rule*. Dulness is not marked in bronchopneumonia, it is in lobar; resolution is slow in the former, rapid in the latter disease. Relapses are quite frequent in bronchopneumonia, but rare in lobar.

Treatment.—This means everything and must be carefully thought out. First and foremost *clean out* the alimentary tract and *keep* it clean. Even before making a diagnosis begin and exhibit calomel, gr. 1-10, with podophyllotoxin, gr. 1-12, every half hour till six doses have been given. Aconitine, digitalin, strychnine, of each six granules, water, 12 teaspoonfuls; 2 to 30 drops every hour (with calcium sulphide, gr. 1-6,) till conges-

tion is controlled and fever falls. Paint the chest with guaiacol, spread lint with carbenzol and cover the thorax and fit on a snug flannel or cotton-batten shirt.

Cough even may be absent though this is not common. In these cases, if we examine very closely, we shall find diminished vesicular breathing and some crepitation upon deep inspiration; moreover, I have observed that the respiration is peculiarly rapid and short.

In these days where we have an effective early treatment it is quite often impossible to say that a child had a croupous pneumonia, as crisis is never reached. In the typical cases crisis may make its appearance on the ninth day—between the sixth and eighth and rarely on the fifth—or even on the third. There may be no crisis at all even in untreated cases, the disease subsiding slowly. The temperature drops several degrees as resolution begins—from 104°F. down to 98°F. or below normal.

As we are aware, "abortive" cases are now frequent: a typical pneumonia setting in and being cut short within three days. Fulminant cases are also met with. Here every symptom is accentuated and unless the patient receives the most careful attention death ensues in the first week. A "central pneumonia" may puzzle the attendant: every symptom of pneumonia exists, but physical signs are lacking and not till the process extends to the surface of the lung can we detect the conditions. The "creeping" form hitherto caused most trouble and the patient was not out of danger for three weeks, one part after another of the lung suffering. Today we cut the process short and render germ propagation or localized congestion almost impossible. Pleurisy often coexists, indeed the pleura is more or less affected in every case (dry form). Peritonitis or pericarditis may also appear.

Treatment.—See chapter on "Bronchopneumonia." Treat the *condition* present. Secure defervescence early,

and if the temperature is high, sponge freely with the carbolated epsom-salt solution. Give aconitine, digitalin, and veratrine in sthenic cases (always early), substituting strychnine in asthenic (and later) phase. Calcium sulphide to saturation and nuclein to increase resistance are positively indicated. Invariably open the bowels as a first thing with calomel and podophyllotoxin (or iridin) and follow with a saline laxative draught, repeating the latter daily. Creosote in small doses (one granule) or creosote carbonate exerts an excellent influence during hepatization and resolution. It may be given every three hours in alternation with calx iodata, gr. 1-3.

The addition of cactin to any medication will suggest itself after the congestive period, as the heart needs support—not the "whip"—and in cases seen late, with exhaustion evident, we shall be compelled to push atropine till slight redness of the skin appears, and then maintain the effect with cactin, gr. 1-67, and strychnine, gr. 1-67, every four hours. If there is much rusty sputum (older children) and it is difficult to raise it, sanguinarine, gr. 1-67, or scillitin—or the two in alternation—are called for. However, where proper treatment has been instituted early we do not get these troubles later.

The question as to whether we should apply heat or cold in lobar pneumonia remains unsettled, because in any given case either may be necessary, or both. Where we have a high fever and few physical signs of lung-involvement the epsom salt sponging gives wonderfully rapid relief; moreover, it aids the defervescents. If however the fever is moderate but the evidences of most extensive congestion exist, *heat*, and heat only, proves comfortable *and* beneficial. Here the chest may be painted with guaiacol (not too much; twenty drops is sufficient) and a good glycerinized paste applied as hot as is tolerable, a cotton-batten-lined undershirt being fitted snugly

over it. Repeat in six hours, if necessary. Cool, wet cloths may be applied to the head in these cases. if it aches, with good effect. Sleeplessness and an irritating cough will yield to codeine, gr. 1-24 to 1-12, repeated two or three times. Pleuritic pains call for bryonin, gr. 1-67, and asclepidin, gr. 1-12, every two hours. Cupping often is advisable. Do not forget the great value of oxygen inhalations. Exhibit small quantities for short periods whenever cyanosis or dyspnea present. (See "Bronchopneumonia.")

If you can see a case early enough and know that localized, deep congestion exists, promptly exhibit atropine, gr. 1-1000, half-hourly for two hours and then begin with the defervescents. The calomel, etc., will of course have been ordered. These measures often suffice alone to abort a case. Excitement or delirium, suffused face, red tongue, with a quick, hard pulse will call for gelseminine, gr. 1-500 every half hour or hour "to effect." Here, too, the cool epsom salt sponging and saline enema often are essential.

Diet.—This is important. The food must be fluid and nutritious: milk and lime water (or vichy), barley water, thin, clear broths and bouillon are alone allowable at first. Fruit juices in water, toast water or oatmeal water may be used with safety instead of barley water, which latter however acts potently upon the kidneys, producing free diuresis. Give two pints daily—with milk or alone—slightly sweetened and flavored with lemon, or with a pinch of salt. Weak cocoa in small quantities may be given after the crisis, with gruels, a soda cracker or two or zwieback. Eggnog is excellent. The prepared blood-foods often are necessary: I give ten to twenty drops of sanguiferrin or bovinine to all my patients, four times daily after the third day. The less they get beyond barley water or plain water the first

twenty-four or thirty-six hours the better. The weakly child will be easily supported, during the stage of high fever, by these preparations and a little milk.

PLEUROPNEUMONIA

In this form of pneumonia we have practically a lobar pneumonia with an extensive exudation of fibrin into the pleural cavity. It is not always possible at first to distinguish this form from a simple lobar pneumonia, but after a day or so *friction sounds* are audible and may be heard till the entire cavity is invaded. At this stage there often is very marked dyspnea and the lung movement is almost absent. If the condition has complicated the grippe, we may have several very anxious days, it being necessary to support oxygenation and somehow eliminate the toxins which otherwise, under the circumstances, would overwhelm the patient. The possibility of the exudate becoming purulent must be borne in mind: even in quite tractable cases there may be a little pus discovered on aspiration. If empyema is suspected, aspirate always.

Treatment is really that of pneumonia (which see), but in nearly every case ammonium benzoate and cactin will have to be given from the very first. Fair-sized doses every three hours are best. Calcium sulphide, gr. 1-6, is given hourly for a day or even two, then every two hours, and at least three times a day quinine hydroferrocyanide, gr. 1-67, digitalin, gr. 1-34, and brucine, gr. 1-67. Caffeine may be necessary to arouse suddenly a flagging heart—give at intervals to effect—but as I have already stated, we do not get these serious symptoms when treatment of an effective type has been instituted early.

The main thing to remember is that the heart must be sustained and the bowel, skin and kidneys kept as

active as possible. Potent counterirritants, or even the application of a cantharidal blister often are called for. Rub the chest thoroughly with croton oil till pustules appear, then apply the oil under the arms. Do *not* apply to the back, or you will probably set up ulcers, as the patient lies on the back chiefly. If a blister is used, sponge the skin with warm vinegar and water, dry and apply canthos, three inches square, below the nipple (be sure the areola is not included); repeat on the other side in twenty-four hours if needed. Clip the bleb at its lower margin, press out the serum, clip off the skin and dress with resin cerate.

Fresh air is essential. As soon as the condition is positively recognized, aconitine, bryonin, and asclepidin (dose according to age) will (given hourly) distinctly limit the process. I am in the habit of blistering *at once* and have no reason to regret it. I also use oxygen early and as often as signs of cardiac embarrassment are evident. Those who have used oxygen only *in extremis* or under high pressure have no conception of the instant efficacy of this agent.

PLEURISY (PLEURITIS)

Pleurisy, or pleuritis, is an inflammation of the pleura commonly met with among older children. It may also complicate the various diseases of the lungs, and is sometimes seen in rheumatism, the exanthema and tubercular cases.

There are three varieties, the usual form being the "dry," or plastic, pleurisy. Less often we have to deal with a serofibrinous ("wet") pleurisy. Here the layers of the pleura are distended with serum. In the dry variety more or less fibrin is exuded—in some cases large quantities are deposited upon the surface of the pleura, which may become thickened. In either form infection

—streptococcic (usually) staphylococcic, pneumococcic—may occur, and we then have a purulent pleurisy, or *empyema*. Finally, a chronic pleuritis may develop, with adhesions.

Exposure to cold or traumatism, together with lowered resistance, are frequent causes. Pleurisy is usually encountered in the late fall or early winter months. It is not infrequent in the cold, wet days of spring. When complicating other diseases, pleurisy becomes a serious matter. In the primary form in children over six years of age it usually runs an even course and the prognosis is decidedly good.

Differential Diagnosis

Acute Plastic Pleurisy.—There is, as a rule, a sudden chill accompanied by a stabbing, sharp pain in the side which may be referred to the region of the nipple or under the shoulder-blade. The disorder usually is unilateral. The cough, which is frequent and dry, increases the distress, frequently causing children to cry and hold their side. Indeed, this condition with an anxious, flushed face and high temperature is almost diagnostic of pleurisy. Prodromata are often absent. On inspiration or movement of the chest, the lancinating pain occurs and for that reason children breathe very lightly and move as little as possible. Later the face becomes pale and distressed, the respiration irregular and the pulse small and wiry, ranging from 100 to 120 per minute. The temperature rarely exceeds 102°F.

Pleurisy with Effusion.—As this form of pleurisy is nearly always secondary the symptoms may be more or less masked. However, occasionally it occurs primarily, and premonitory symptoms will then be noted. More or less distress is often experienced in the pleura for several days and the child may complain of difficulty

or distress in breathing. Not infrequently the parents, or physician, consider the symptoms to be due to a blow or may treat the child for rheumatism. Sometimes a troublesome cough coexists. This of course increases the pain, as does inspiration or movement. A peculiar feature of the disease is the absence of fever, which rarely exists in the early stages, during the day. Sometimes the temperature will rise to 100°F. or over in the early evening and remain high during the night. Loss of strength, lassitude and decline in weight, with some anemia, complete the picture.

The patient is, as a rule, constipated, has no appetite (or may be ravenously hungry on occasion) and tosses restlessly or moans during sleep. It will be seen that the two conditions differ markedly.

The Dry Form.—In the dry form the acute pain, cough and rapid pulse usually bring about the prompt attendance of a physician, though the case may be so mild throughout as not to demand attention. Upon examination of the patient a distinct "friction sound" will be heard on auscultation, the roughened surfaces of the pleura rubbing together, causing a sound similar to that made by the contact of sandpaper. Fine râles are (rarely) also heard. There is dulness on percussion and distinct limitation of motion on the affected side.

This form of pleurisy may last a week or three weeks but, under proper treatment, practically every case recovers. However, subsequent attacks are probable and if improperly treated, adhesions may occur or marked thickening of the pleura. This of course will more or less interfere with lung expansion, hence decreased oxygenation of the blood follows.

Pleurisy with Effusion offers a different picture. The patient, when walking, may be seen leaning slightly toward the side affected, with his hand compressing the

ribs. When in the recumbent position, he will invariably lie upon the affected side: here there is decreased movement (with increased expansion upon the sound side) and there may be more or less distension of the spaces between the ribs, marked dulness (the location of which may change by varying the patient's position), shallow respiration, small, rapid, compressible pulse, cool or even cold skin, and more or less cyanosis.

In some cases adhesions limit the effusion. In others the amount is so great as practically to incapaciate the lung, and here all the symptoms described are accentuated, death seeming about to occur. The temperature at this stage varies, but is invariably one or two degrees above normal. It is well to remember that the apex-beat is displaced, that the area *above* the fluid, on being percussed, gives a tympanitic note. There is bronchial breathing, friction sounds are heard above the fluid, and after its absorption a peculiar "bleating" sound may be noted over the edge of effusion. When fluid is suspected, puncture should be made in order to differentiate positively from empyema. Unfortunately, in children under three, pleural effusions are almost always purulent (empyema) the treatment here is *surgical.* Operate promptly and push nuclein and calcium sulphide.

Treatment.—In the acute form this is simple and effective. Exhibit promptly blue mass and soda, gr. 1-2 (or in younger children, calomel gr. 1-10) and iridin, gr. 1-6, every half hour for six doses. Three hours after the last dose exhibit a saline laxative draught, which should be repeated every day. Into a glass containing 12 teaspoonfuls of water put 6 granules of aconitine, veratrine and digitalin. Twenty to thirty drops of this solution should be given half-hourly until sedation, and then hourly or every two hours as may be necessary. Every three hours asclepidin, gr. 1-12, eupurpurin, gr.

1-6, bryonin, gr. 1-67. In the serous form calx iodata, gr. 1-6 every three hours.

It is well to give in asthenic conditions brucine, gr. 1-67, and cactin, gr. 1-134, with each such dose of calcidin. In the *acute* variety apply promptly a mustard plaster, adding a little white of egg to prevent vesication. (A "mustard leaf", J. & J., applied to the *greased* skin does not blister.) A hot compress or warmed flannels may be placed over the plaster. "Capsoline" (capsicum in vaseline) is a useful emergency preparation. The glycerinized pastes may also be applied. Rub the affected side first with guaiacol. On removal, linimentum terebinthinæ or camphorated oil may be rubbed in and the chest should be "strapped" with adhesive plaster. Strapping should not be done, however, until pain has been alleviated.

If this treatment is instituted early enough effusion is not probable. The mercurial should be given every third night. The patient should be put on a light diet and the bowels kept as antiseptic as possible with the sulphocarbolates (2 grains every four hours).

In the cases presenting but slight rise of temperature with cold extremities it is well to give a few doses of hyoscyamine (or atropine) in place of aconitine or veratrine, while in those presenting a high temperature and marked pain, with flushed face, gelseminine is the drug of choice. In a few cases (very few) codeine will be indicated to control the cough, gr. 1-24 every two hours.

Where there is marked effusion with distension of the chest-wall (subacute pleurisy), an aspirating needle should be carefully introduced between the fifth and sixth, or the sixth and seventh, ribs and a good proportion of the fluid drawn off. If only a small quantity of serum is present do not aspirate. If pus presents, the cavity must be promptly drained and irrigated.

In these cases nutrition must be maintained. Nuclein should be pushed (8 to 10 drops morning and night), and the triple arsenates (one to two granules) exhibited three times a day after food. Calx iodata, gr. 1-3, hydrastin, gr. 1-6, and quinine hydroferrocyanide, gr. 1-67, proves an excellent combination in the later stages, assuring restoration to normal conditions and elimination of effete material.

As the patient improves have him practice deep breathing and mild calisthenics, and vibrate the thorax two or three times a week thoroughly in order to break down adhesions and stimulate absorption. There is no question whatever as to the efficacy of iodine in the last stages, and iron iodide (gr. 1-6) may be given for two or three weeks after calx iodata is relinquished. In older children a course of the triiodides will be beneficial. In some cases digestion suffers markedly. Papayotin, 1-3 of a grain after meals, will insure assimilation.

CHAPTER XII

DISEASES OF THE HEART AND CIRCULATION

For Data Relative to Pulse-Rate, Apex-Beat, and so forth, in Childhood, See Chapters One and Two

CONGENITAL HEART DISEASE

It is useless to attempt a discussion of the various conditions which may present in children afflicted with congenital cardiac disorders. Malformation of various degrees of severity are present, and death occurs in the majority of cases in early life. The ventricular septum is most often defective, then the auricular; an open ductus arteriosus or foramen ovale, pulmonic stenosis, and insufficiency follow in frequency in about the order named. Complications—for instance, septum-defect with pulmonic stenosis—are encountered in a porportion of cases. As a matter of fact, a patent foramen ovale has little or no clinical significance.

Symptoms.—These often appear quite early in life but may not do so till puberty. Cyanosis, dyspnea, loud (systolic) murmurs and (if the child lives) clubbed fingers. More or less dropsy and epistaxis or hemoptysis also will be noted.

Treatment.—We can hardly hope to influence the lesion itself and the best we can do is to meet symptoms. Cactin and cratægus are wonderfully active and efficient tonics, the former improving the tone of the cardiac muscle and increasing its nutrition. The child must

be nursed along, kept quiet, given fresh air in abundance, and *kept warm*. It is not safe to let such children have "fits of temper" or to experience corporal punishment; very active exercise is to be forbidden. Salt sponging and the use of non-irritating diuretics and laxatives are to be recommended. Cascarin or the "child's laxative syrup" suggested earlier may be used. Asparagin or arbutin prove the best diuretics, but if digitalin or strophanthin are used, they may not be needed. Digitalin with brucine is a valuable combination in many cases; apocynin will give results where there is edema. However, one cannot intelligently outline any treatment till the physical conditions are understood. Study your patient and medicate intelligently, but eliminate and equalize circulation as much as possible without *spurring* the heart. Aid it and ease the strain wherever and however you can.

PERICARDITIS

The pericardium is involved quite frequently in older children, especially those suffering from rheumatism or the acute infections. Boys seem to be more subject to it than girls. Trauma may be the cause; it may appear in tuberculosis or complicate pyemia, when it is generally fatal. In pleurisy and pneumonia there may be a slight involvement of the external surface of the pericardium (external pericarditis). This is not a serious condition in itself. In dry pericarditis fibrin is formed rapidly and adhesions are frequent between the visceral and parietal layers. Serofibrinous pericarditis also may result in adhesions, though in favorable cases the serum exuded is reabsorbed. In the purulent variety the pericardium contains pus and the prognosis is indeed unfavorable. Recovery is possible, however. It is not always easy to distinguish the different forms, but the following points should be remembered:

Dry Pericarditis.—Friction-sounds are heard at the base of the heart coincident with the beat; if there is high fever and rapid heart-action a buzzing, humming sound supplants the "friction." This may resolve itself into the next form, viz.:

Serofibrinous Pericarditis.—Here, on examining the chest, we shall note obliteration of the intercostal spaces about the heart—the precordium may be enormously distended. The apex-beat is absent or hardly noticeable. "Friction" may be detected on auscultation *and* palpation. On percussion marked dulness will be noted in an area which may be represented by a double triangle having a common base at the fifth rib and joining in the midsternal line. Upon the right the dulness joins that found normally over the liver, on the left we get the hollow sound of the stomach. As a rule the right triangular area will have its apex at the fifth rib and is larger than the left. Murmurs (endocardial) are heard plainly. Heart-sounds are muffled and distant. If purulent conditions prevail, we shall have chills, fever of the regular septic type (irregular) and profuse sweats, with very marked anxiety. Pleurisy may coexist and render diagnosis very difficult. If, however, the heart-sounds are weak and the apex-beat normal, suspect pericarditis.

In *endocarditis* (rare in children) there is transmission of the beat to the axilla and back; the murmur is very soft also.

Treatment.—The patient must be put to bed and kept absolutely quiet. Apply a blister over the cardiac area, or slightly below the nipple. Give small, repeated doses of amorphous aconitine, gr. 1-500 to 1-250, digitalin and bryonin, of each gr. 1-134; macrotin, gr. 1-6 with every other dose may be needed to limit pain; if acute, give a few doses of codeine, gr. 1-24 to gr. 1-12. Calx

iodata, gr. 1-3 every two or three hours and, after the blister, cold compresses. (Epsom-salt solution is preferable.) In every case order at the start blue mass and soda, gr. 1-2, and iridin, gr. 1-6, half-hourly for four doses, and follow with a saline laxative two hours after the last dose. If "rheumatic" symptoms exist, salithia is indicated *twice* daily. Barley water should be given quite freely, and scillitin, gr. 1-67, and caffeine, gr. 1-6, exhibited with each draught will insure free diuresis. Potassium citrate may be used if desirable or preferred.

In older children, with rheumatism, the "rheumatic—Candler" (1 every 3 hours)—formula already given, see "Rheumatism"—will, with salithia and free elimination per bowel, prove practically specific. Calcalith (1-2 tablet t. i. d.) is also to be considered. Effusion subsides very promptly, fever declines and pain ceases, generally within thirty hours.

If pus is present push calcium sulphide and inunctions of colloidal silver or give intravenous injections of the latter. Be prepared to aspirate if conditions become desperate. If you have to do it, puncture a little to the left of the sterum in the fifth interspace: insert the needle upward and a little outward and have it large enough to carry off fibrinous plugs. Absolute sterility must be insured. Seal the puncture with collodion and gauze, then a piece of adhesive plaster.

The epsom salt pack, cold enemata, and free use of diuretics will be the main features in ordinary cases.

The diet must be light, easily assimilated, and free from waste.

As soon as the acute conditions subside (seven to twenty-one days) give hydrastin, gr. 1-6, cactin, gr. 1-134, and xanthoxylin, gr. 1-6, every four hours; nuclein (it may well be given early) six drops three times daily, and after meals arsenic iodide, gr. 1-67. Sanguiferrin

or similar preparation with meals. Have the patient sent to the country or seaside. Watch the urine carefully.

Chronic Pericarditis.—Meet the symptoms.

ACUTE ENDOCARDITIS

The fetus may suffer from right-sided inflammation of the heart, thus being born with some malformation or lesion. Young children are rarely seen with this disorder; a few cases may occur from the fourth to the sixth year, while after that it becomes comparatively common. The acute infections may set up endocarditis; it may accompany chorea, and is quite frequently the first sign of rheumatism (acute). A malignant or ulcerative type of the disease exists which is invariably fatal. It is quite possible that some reported "peculiar" cases of supposed "meningitis" or "spotted fever," really were ulcerative endocarditis. Here a petechial eruption is usual, and the rigors, sweats, irregular high fever, rapid prostration and early coma markedly resemble the picture seen in true meningitis, minus the opisthotonos. The mitral valve usually is affected, the aortic rarely; the right side escapes in practically every instance. The deposition of fibrin on the inflamed area results in excrescences which cause leakage. Chronic insufficiency may result from deformity of the valve or contraction of the chordæ tendinæ.

Symptoms.—Fever, dyspnea, restlessness, and prostration. Pain may be complained of. The onset in primary cases is abrupt and the temperature may run up to 104°F. in a few hours. Just such a picture may be the first suggestion of rheumatism (with heart involvement); if this disease—or chorea—already exists, the picture may be complicated. The heart-action will be exaggerated always, but beyond this no distinctive physical signs may be noted for a few days. About the third

or fifth day a soft blowing murmur (systolic) will be detected at the base—often transmitted to the left—and a thrill and accentuated pulmonic second sound are not often absent. Signs of dilation and insufficiency increase steadily and as steadily decline or remain, to a greater or less degree, permanent.

The attack may last one or three weeks, the fever disappearing first. Unfortunately we cannot say that the patient is out of danger for some weeks as dilation may continue—dropsy, dyspnea, cyanosis set in—or pulmonary complications destroy life. Rarely emboli cause trouble. Hemiplegia may result from central embolism or small emboli reach the kidney or spleen and set up inflammation and congestion or even hematuria. Murmurs may present for a time and disappear, but more often are persistent. Recurrence is possible. The prognosis (save in choreic cases) is good.

Treatment.—Positive rest, light diet, and aconitine, digitalin, and strychnine in small doses to effect. It is well to exhibit promptly blue mass and soda with iridin (aa. gr. 1-6) every half hour for four doses every night, for three nights, giving salithia next morning, and either calcium carbonate compound or the "rheumatic" formula three times daily with barley water. Sponge twice daily with the solution of magnesium sulphate, and give bryonin and macrotin for pain. Externally early blister or mustard-leaf; guaiacol may be well rubbed in (ten drops) morning and night.

As soon as fever falls, cactin and brucine (aa. gr. 1-67, t. i. d.) with quinine hydroferrocyanide, gr. 2-67; hydrastin, gr. 1-6, half an hour before food. Feed lightly for some weeks, and keep the child in bed for at least a month after fever has gone—for *three months* if the attack was severe. If you allow the patient up too early, look for serious trouble—all that goes with marked dilation.

I am inclined to look upon all cases—save those distinctly choreic—as calling for antirheumatic treatment; the result is always satisfactory.

MYOCARDITIS

The heart-muscle here is inflamed and subject to degenerative changes. The condition often follows an adhesive pericarditis. The acute infections—diphtheria, scarlet-fever, rheumatism—may coexist or cause it. It is not at all easy in these cases to make a diagnosis. The sudden deaths which occur so unexpectedly in diphtheritic or scarlatinal cases are probably often due to a myocarditis. Fainting, marked pallor, "shortness of breath" or dyspnea, feeble heart-action, should awaken suspicion. The apex-beat is feeble or entirely indistinguishable.

Treatment.—Cactin in quite large doses (gr. 1-67 every three hours) is the best remedy; strychnine arsenate, gr. 1-134, may accompany it. Give a highly nutritious diet, with juglandin, xanthoxylin, and hydrastin, of each gr. 1-6 prior to meals, and two of the sulphur laxative tablets after eating. If digestion is at all poor add papayotin, gr. 1-3.

FUNCTIONAL HEART DISORDERS

As a child nears puberty we sometimes find it suffering from palpitation or too rapid or too slow a heart. Anemic children present "murmurs" also. Giddiness, sudden sweating, faintness (or syncope), roaring or buzzing in the ears, and reasonless fright or abnormal sensitivenes are among the troublesome symptoms. If the child is of neurotic or hypersensitive parentage we must allow for suggestion and hysteria, but undoubtedly these very children are those most liable to be really affected. It is a strange fact that where organic disorder exists there

will be little or no complaint, the child (if at all advanced) "trying to get rid" of its malady. In functional cases the child has a long list of terrible symptoms—which very often are described with wonderful attention to detail. These cases require careful examination and if there are no evidences of organic disease, treatment is easily outlined.

Treatment.—Treat the *patient*. See that he gets neither coffee or tea; cut down his supply of candies, sweets and pastry; order good, nourishing blood- and tissue-making food; let the child loose in the open air for a month or two; deep breathing; regular calisthenics; the clubs or light dumb-bells—full expansion of chest with consequent oxygenation of the blood means a great deal here. Warn against masturbation and cigarets and examine the genital organs: circumcise if deemed advisable. Explore for *worms* (a frequent source of trouble) and medicate therefor if it seems wise. Don't forget the eyes: a properly fitted pair of glasses may clear up the trouble. In schoolgirls constipation will often exist: put an end to *that*. Warn the parents against overstudy and late hours. In girls of twelve and over find out something about menstruation. *Examine the urine.*

For anemia give the triple arsenates with nuclein, two tablets after meals, and alternate quassin and juglandin (gr. 1-6) half an hour before eating. It is well to give also sanguiferrin or bovinine with each meal. Nuclein, 10 drops, also morning and night. If growth is unsatisfactory and bones small or the teeth poor, add calcium lactophosphate, gr. 1-6. Cactin, gr. 1-67, in nearly all cases; scutellarin, gr. 1-3, and avenin, gr. 1-3, every three hours where there is extreme nervousness or twitching of extremities or eyelids. Zinc phosphide, gr. 1-67, may be given for a time after two meals, daily. If this does not serve to control sleeplessness or night terrors, give passiflora incarnata, one

dram at bedtime. Iron arsenate, gr. 1-67, quassin, gr. 1-33, quinine hydrobromide, gr. 1-6, is an excellent formula for many of these cases: give it for two weeks a short time before meals and papayotin after eating, then change to hydrastin and juglandin prior to food and the arsenates with nuclein afterwards. Always exhibit *cactin* on an empty stomach.

CHLOROSIS

(*Green Sickness—Maids-Ill*)

Chlorosis is generally understood to be a disease affecting girls at the age of and after puberty. As a matter of fact, it is a primary anemia (boys may be chlorotic) in which there is a marked reduction in the hemoglobin without any very great diminution in the red blood-cells. It is impossible here to enter into the subject of blood-changes, important as it is, but it may aid to know that on Von Fleischl's scale the hemoglobin in some cases is as low as twenty or thirty; leukocytosis is absent and the red-blood-cell count may be quite or nearly normal. In the most severe cases poikilocytosis is met with. The face bears a peculiar greenish pallor and acne is quite common. The patient is nervous, debilitated, prone to mild hysteria, and eats most peculiar or even unnatural things: chalk, pickles, paper, rag, hair, and slate pencils or starch are favorite tid-bits. Some girls drink vinegar. Headache, constipation and indigestion are frequently complained of. The abdomen often is large and not infrequently menstrual disorders are a marked feature. Murmurs (hemic) are heard over the base of the heart and large vessels. The tongue commonly is coated and the breath unpleasant. Severe gastralgias (due often to hyperacidity) may have to be relieved. In not a few cases albuminuria will be noted.

Treatment.—If carefully instituted, specific. Relapse may occur. First of all, look upon your patient as auto-

toxemic. The liver always is torpid and owing to blood-changes, the body-chemistry generally is deranged. We must restore normal metabolism.

Order aloin, gr. 1-4, atropine, gr. 1-1000, strychnine sulphate, gr. 1-134, cascara, or cascarin, gr. 1-4 (aloin, atropine and cascara compound), at bedtime every night for a week, then every other night for a week, then every third night for a final week, and a saline every morning. Juglandin, gr. 1 6, quassin, gr. 1-12, xanthoxylin, gr. 1-6, half an hour prior to meals; with each meal sanguiferrin, one dram or one tablet, and after eating, two triple arsenates with nuclein tablets. One hour later five grains of the sulphocarbolates with a glass of water. If food is improperly assimilated add at first gr. 1-3 of papayotin to the after-meal medication.

Order deep breathing, and a salt sponge on rising. Have the patient sleep in a room with open windows and walk at least two miles each day. Red rare meats, fruit, fish, vegetables and well-cooked cereals in varied abundance.

Meet peculiar conditions as they occur: dilate a constricted sphincter ani; dilate also a cervical canal which refuses to allow exit to the menstrual flow; correct misplaced uterus. Think always of *worms* (they frequently complicate) and in doubtful cases give a few doses of calomel and santonin. (See "Worms.") In hyperacidity the mixture of papayotin, charcoal and soda, known as "papayotin compound No. 2", proves efficient—one tablet after meals, but the neutralizing cordial tablet is often desirable (sodium carbonate, sodium sulphocarbolate, emetine, hydrastin, rhein, aromatics). One may be given after meals and repeated in an hour. After a week's treatment however hyperacidity hardly ever presents. If amenorrhea is a feature, exhibit potassium permanganate, gr. 1-4 three times daily for two weeks prior to expected flow, and

morning and night aletrin, gr. 1-6, caulophyllir, gr. 1-6, macrotin, gr. 1-6 and hyoscyamine, gr. 1-250.

SECONDARY ANEMIA

Here we have blood-changes which are known to be due to some preexistent disease or lack of proper nutrition. Malaria and hemorrhage are frequent causes. The symptoms are well known: paleness, languor, malassimilation, irritability and hysteria are among the chief. Epistaxis occurs and the extremities are prone to be edematous. The blood shows marked abnormalities: the specific gravity is lowered; red blood-cells and hemoglobin are reduced in relative proportion; normoblasts and megoblasts will be noted in severe cases.

Leucocytosis is not uncommon; poikilocytosis is observed in the worst types. The prognosis varies: where the anemia follows operation or an acute infection it usually yields to treatment, if it is progressive and due to organic disease, bad. *Pernicious anemia* (rare in children) usually is fatal.

Treatment.—As in chlorosis. Improve the surroundings. Give small quantities of nourishing food at first, with the bitter tonics an hour earlier and a digestant (papayotin) afterward. The arsenates with nuclein will serve, if anything will. Insist upon open-air life; moderate exercise, gradually increased; cool salt sponges followed by alcohol rub; massage. Grape juice is of service and the yolk of eggs beaten up with milk once daily is excellent. Sanguiferrin or some like preparation is essential.

Briefly, we must first afford the system blood-forming material in the most concentrated and easily assimilated form, then we must improve the appetite, and as more food is taken see that it is properly disposed of; wa te must be removed from the body; the organs must be stimulated to full activity and the skin be allowed to act as nature intended.

We must stop all strain and secure *rest* for many hours each day and while doing this must see that enough exercise is taken to keep the blood circulating. Finally, we must remove any abnormality which may retard recovery. If there is marked deterioration of the nervous system we have in neuro-lecithin a marvellously active reconstructant. One-half to one tablet should be slowly swallowed between meals.

LEUKEMIA

Extremely rare. The lymphatic form may be seen among children; boys are most liable to suffer. Rachitis, syphilis, malaria or acute infections predispose. There are two varieties, acute and chronic. The blood-changes are pronounced in the worst cases, that fluid losing color and resembling sanguineous pus. There are also degenerative changes in the marrow of the long bones (myelogenous form). The spleen becomes enormous in the chronic affection, and in the lymphatic type the glands are generally enlarged but remain movable. In the acute variety the spleen is not as immense as in the chronic but there is greater tendency to hemorrhages. The disease should be classed among the acute infections.

For a complete description of pathology and blood-changes see larger works. The symptoms are those of anemia, the onset being very gradual. (In the acute form fever and rapidly enlarging spleen and glands are seen.) Various hemorrhages may occur and petechiæ are common. The child has a "dirty" pallor, disorders of hearing or vision and nervous phenomena are frequent. The outlook is far from good: acute cases may last a few weeks; in the chronic form the degeneration may be stayed, but frequently patients succumb in a year or so.

Treatment.—Phytolaccin, berberine, and nuclein in doses as large as can be safely given. Arsenic sulphide and

iodide alternately week and week about, gr. 1-67 after meals for two weeks, then give instead stillingin and rumicin, gr. 1-6 each for a week, with a mild mercurial every other night and daily a saline laxative. Return to the arsenic for two weeks. Massage over the glands, dilute sulphurous acid with meals for ten days out of each month, and quinine hydroferrocynide, gr. 1-67 t. i. d., straight through. Salt sponge-baths, open-air life, and extremely nutritious diet. Of late the application of high-candlepower lamps over the spleen and glands has given results. The Roentgen ray has been also lauded, but as we are not at all sure of what we have to deal with here its use is merely experimental.

PURPURA

The appearance of subcutaneous hemorrhages (spontaneous) must be regarded as a symptom. Simple purpura, purpura rheumatica, purpura hæmorrhagica, are all encountered, and very rarely we may see Werlhoff's disease (giant purpura). Purpura may appear in the acute infections (whooping-cough—from strain), in the cachexias (degenerative changes), and in some poisonings and severe neuroses. There may be either small petechiæ or extensive ecchymoses. If these affect the skin, we have purpura simplex, if the mucosa, purpura hæmorrhagica. In by far the great majority of cases we have to treat a primary disease, exhibiting calcium chloride, gr. 1-2 t. i. d., and ergotin, gr. 1-3 every four hours, and giving gelatinous food as much as possible. Hydrastin has given me the best result, and in purpura hæmorrhagica I give hydrastin, gr. 1-6, ergotin, gr. 1-6, eupurpurin, gr. 1-3, every three or four hours, with iron arsenate in full doses, and get results.

We must get away from the idea that we have a hemorrhage merely: we have a very much more serious condition to deal with. Eucalyptol, gtt. 2 to 4 four times daily,

sometimes acts very nicely if iron and hydrastin are given also, but in nine out of ten cases there is an underlying systemic taint which does not yield till we have gone the right way to work and built up from the bottom. Let us stop hemorrhages—stypticin, hydrastinine, iron-alum, etc., —but let us also endeavor to restore normal conditions so that hemorrhages may not occur.

First of all, empty the bowel, then keep it free from inimical organisms by exhibiting calcium sulphocarbolate, grs. 2, and zinc sulphocarbolate, gr. 1-2, an hour or so after meals. Give a saline laxative every morning or alternate morning and calcium lactophosphate, gr. 1-6, iron phosphate, gr. 2-67, juglandin, gr. 1-6, one hour prior to food. Eucalyptol may well be added. Just fifteen minutes before the meal exhibit cactin, gr. 1-134, and quinine hydroferrocyanide, gr. 2-67, and a tablet of sanguiferrin with the food.

Purpura rheumatica yields in a few days to the "rheumatic" formula, salithia, and the sulphur laxative—two to three tablets after food.

Giant purpura is not understood: it appears in young adults suddenly; there are extensive hemorrhages under the skin (maybe from mucosa also) which last ten days or more and slowly disappear. Recurrences may take place yearly at the same time. Treatment is not settled here but would be along the lines indicated.

Purpura fulminans destroys children under six. There is a convulsion or chill, very high fever, vomiting, and a prostration which increases till death, which occurs in twelve to forty-eight hours. On autopsy large hemorrhages are seen to have occurred into the adrenals. Frequent small doses of atropine might be tried, with adrenalin chloride. I would push hamamelin and rhus aromatica, and put the child in the wet-pack. Cool decinormal high enemata.

CHAPTER XIII

DISEASES OF THE NERVOUS SYSTEM

EPILEPSY

I have recently advanced some new ideas relative to the treatment of this protean disease, and as the treatment, not only in my own hand but in those of physicians throughout the country, has proven successful, I am led to hope that we are getting "nearer the light." The treatment hitherto has been empirical or entirely farcical. I cannot present the subject better than it appears in a paper contributed to *The American Journal of Clinical Medicine*, which follows.

[NOTE: It is practically impossible to give special instruction as to dosage necessary for children. In treating very young patients one-fourth to one-half the dose of *toxic* drugs named should be exhibited. Here, more than anywhere else perhaps, the small dose at short intervals—increased "to effect"—applies.]

Book after book has been written upon epilepsy, and yet when we undertake to define the disease we find ourselves compelled to enter into a complicated description of what happens to the epileptic and finally, usually to quote some standard writer or textbook. Gould defines epilepsy as "a nervous affliction characterized by sudden loss of consciousness and power of motion with tonic and clonic convulsions; the paroxysms lasting a short time." This does not well express the condition even and conveys little idea of the disease itself.

Echeverria takes more words to do it but gives us a more lucid description of what epilepsy is. He says: "Epilepsy is a disease constituted by sudden paroxysms excited upon a direct reflex action of the medulla oblongata in a condition of exalted irritability, coincident with sudden depression in the cerebral circulation and with the loss of consciousness, with or without muscular spasms."

This is hardly satisfactory, for while we gather therefrom the idea that owing to some cause the brain becomes affected and motor and sensory disturbances follow, we do not find any enlightenment as to the how or why. Spratling, the most recent writer on epilepsy, after quoting the above and other writers says: "Epilepsy is a disease or disorder affecting the brain, characterized by recurrent paroxysms which are abrupt in appearance, variable in duration—but generally short—and in which there is an impairment or loss of consciousness together with an impairment or loss of motor coordination *with* or *without* convulsions."

It is evident, then, that an epileptic seizure will present these phenomena: (1) Disturbed or lost consciousness, the condition coming on either without any warning and instantly, or with but a fleeting stage of blackness or vertigo, the whole being transitory in character; (2) loss or impairment of motor coordination, usually sudden in form and transitory in character; (3) convulsions, immediately accompanying or more slowly following either of the above conditions or the two combined. The convulsive feature, however, may be lacking.

In any true epileptic attack there must be pathological changes in motility and consciousness. There are modified forms of the disease in which the patient seems to have periods of "vacancy," "darkness" or "forgetfulness," during which there may be little if any physical disturbance. Such conditions may last a moment or two or

continue for days. Other epileptics will pass suddenly and with a single cry from a normal condition into a state of violent convulsion without entirely losing, for a moment, their knowledge of passing events. These patients remember later to some extent what was done for them, and, less rarely, what they did.

Spratling points out that the minds of these patients seldom become impaired or show signs of abnormality during the intervals between paroxysms and suggests that sooner or later we shall be able to differentiate them from epilepsy proper as "epileptiform" or "epileptoid."

The possibility still remains, however, that such cases may gradually assume the true epileptic type and, coincidentally, the epileptic mentality. Whether the epileptic seizure or "fit" is caused by a diseased condition of the brain itself, or the brain deterioration is due to the constant recurrence of the abnormal conditions which cause and accompany the attack, is a matter which is unsettled. The fact that the most brilliant genius may, in his brightest moments, be suddenly seized with a violent epileptic fit (presenting all the horrible symptoms of the malady) and yet be again, within a few hours, mentally equal to any of his fellows, would tend to prove that the origin of epilepsy is outside the brain.

That those who suffer from the disease in its more marked form become mentally and physically "warped" is hardly to be wondered at, neither is it difficult to understand that the epileptic is likely to bestow upon his offspring the physical condition which will cause epileptic seizures to manifest themselves upon slight provocation.

Epilepsy a Toxemia

It would be impossible to present here fully the reasons why it is probable that epilepsy is distinctly a manifestation of some systemic toxemia. It is, however, generally

admitted that any treatment directed against the epileptic condition itself is foredoomed to failure. On the contrary, we are well aware that convulsions and other phenomena of a distinctly epileptic character may be put an end to by some very simple remedial measure, such as the dilation of a constricted sphincter ani, removal of a tight foreskin, liberation of an adherent clitoris, the removal of worms, correction of gastric or ocular disorders, and so on.

We are also familiar with the fact that epilepsy very often begins during the period of "teething;" it also occasionally follows severe cases of the exanthemata, diphtheria, etc. Fright or shock may originate the condition. It is more than possible that any irritation, central or peripheral, if long continued, may create such pathologic conditions that convulsions will follow, and these may later become distinctly epileptic in type.

All convulsions are not epileptic, it is true, and every epileptic seizure is not accompanied by convulsive features; but it is rare for the individual to have convulsions long and escape epilepsy. The fact that epileptic seizures occur at intervals—sometimes of months—and that between the attacks the patient may enjoy excellent health, proves that the malefic conditions which cause the train of symptoms accompanying the epileptic attack are not constant.

The abnormality of function or disorder in the metabolic processes may, it is true, exist steadily in a minor degree, but it is only when the system becomes overburdened with toxic matter or the irritation reaches a climax that the explosion takes place. Is it not extremely probable that some error in the body-chemistry may cause the nervous system to be supplied with a toxic substance (such as cholin) instead of the lecithin which is present in the medullated sheaths and from which cholin can be split off?

We are not yet sufficiently familiar with the processes which go on in the human body to be able to say just how or where certain effete products are formed; neither are we able to explain the exact methods by which the nerve-fibers are constantly renewed, notwithstanding the strain they are subjected to, but we do know that *any* marked metabolic disturbance affects the nervous system profoundly and we are also cognizant of the fact that prior to an epileptic seizure the urine shows an almost complete absence of uric acid. Other signs of the coming storm are also always observable. Perhaps, when the chemistry of the urine and feces is better understood, and when we are able to understand the processes which produce nuclein and lecithin, we may be able to isolate and label the toxin which, produced under certain abnormal conditions, enters the nervous system and sets up the epileptic condition.

The fact that trauma may cause epileptic attacks does not in any way weaken this possibility. Pressure upon the brain or an important nerve-trunk acts as (1) a paralyzing agent, and (2) as an irritant. Hence even severe bruising would cause congestion and it is quite probable that in the process of absorption some irritant is produced. Direct pressure (as of a bone fragment upon the brain itself) would mechanically cause either irritation or paralysis and might also set up the condition necessary for the production of toxic material.

Briefly the argument is this: If in the normal human system there is formed such a complex body as lecithin and if this substance is essential to natural nerve repair and growth (being supplied to the nerve-fibers from the medullated sheaths) is it not quite possible that in certain abnormal conditions this ordinarily nutritive and reparative substance should be improperly constituted and either act upon the nervous system as a direct irritant or, by being deficient in some vital particular, set up pathological

conditions in the nerve-fibers which finally reach a climax and are manifested by the epileptic storm?

There can be no question but that depression of the renal nerves causes not alone a decrease in the amount of blood passing through the glomeruli but also a diminution of secretory activity in the epithelium. Similar nerve disturbances affect hepatic action and limit or change the secretions of that organ. Given, then, an initial nerve disturbance (shock, fright, trauma or even the irritation caused by abnormal blood constituents) it is easy to see how various metabolic processes may become deranged and the resultant product be instead of nutritive or reparative, toxic and destructive in action.

Chemists appreciate the immense difference the addition or subtraction of even one molecule of water may make in a substance. How deleterious, then, must be the changes which take place in the chemistry of the living body when effete matter which should be separated from the blood-stream goes back again to form new compounds which, later, in their turn, may set up irritation or inflammatory conditions. Thus a simple nervous shock may suffice to set up a vicious circle which will end in supplying to the nerves toxic instead of nutritive material. The exciting cause may be slight.

A thorough and unbiased consideration of the subject will lead any clinician to the conclusion that we shall find the *fons et origo* of epilepsy in deranged metabolism, the probable cause being the production of a toxin which exerts an irritant action, causing the motor centers in the brain to manifest "explosions" of energy.

The Varieties of Epilepsy Usually Seen

Idiopathic Epilepsy is that form which cannot be accounted for by either organic disease, reflex irritation or morbid states of the blood, and so forth.

Jacksonian or Cortical Epilepsy consists of limited convulsive motions present in a few muscles or constantly having origin in a certain group (one leg or arm). Consciousness as a rule is unimpaired. This form may lapse into the more severe type:

Grand Mal.—The worst form of the disease or "great sickness." Here the patient falls to the ground suddenly—usually as if thrown; consciousness is lost and motor coordination destroyed.

Petit Mal (*Little Sickness*).—A milder form and that usually first experienced. The patient need not lose consciousness or motor coordination. Though there is invariably some muscular involvement (localized or general) the patient may not fall or exhibit a convulsed aspect. Frequent attacks of petit mal are apt to bring about the more severe type. However, cures of this form of the disease are not uncommon. Grand mal, on the contrary, once fairly established, rarely yields to any treatment.

Psychic Epilepsy.—It is questionable whether this condition should be counted as epileptic. Here the mind alone is affected, there being a temporary lapse of memory or loss of the ego. The attack may last a few seconds or be prolonged for weeks and, during the seizure, the patient may perform correctly the most complicated duties or act in a manner entirely unlike himself. Many crimes are committed by patients of this class and most of the temporary or total "disappearances" are due to sudden attacks of "psychic epilepsy."

This classification is, as will be noted, entirely based upon the symptomatology and as the general practician does not, as a rule, attempt to treat complicated or obscure brain or nervous diseases, it will probably suffice. The "Dictionary of Psychological Medicine" gives thirty-eight varieties of epilepsy: abortive, gastric, acute, intestinal, alcoholic, masked, nocturnal, etc., etc. This is really

confusing, for the qualifying term simply is quasi descriptive and in no way differentiates between *grand ana petit mal* and, after all, these are the two main forms of the malady.

It is interesting here to note that as far back as 1870 Echeverria wrote: "Epilepsy is not a morbid entity existing by itself but a manifestation of *manifold derangements disturbing the nervous system*, giving rise to definite inseparable conditions—immediate cause of the convulsive paroxysm—that remain the same, whatever the origin of epilepsy. No other malady exhibits a wider range of its etiology. There is scarcely a disease affecting the human frame in which epileptiform convulsions might not happen as an accident or essential phenomenon."

In fact, we may turn from writer to writer and fail to find any real information as to what epilepsy is, though the perusal of their work will impress upon us the enormous range of pathologic conditions which underlie its various forms.

Its hereditary origin is insisted upon by many authors. That the condition (or tendency to epilepsy) is due to some nerve or other degenerative disease in the parent more frequently than to any other cause is generally accepted, as also is the fact that fully 80 percent of all cases begin before the twentieth year.

Here modern writers have found a basis for another classification. In brief it is as follows: *Infantile inherited:* Direct, inheritance from either parent; indirect, alcoholism, insanity, etc., in either parent. In either class the epileptic seizure may come on either after some exciting cause or without any apparent incitation. *Infantile accidental:* Birth accidents, the specific fevers, dentition, emotional shock, etc. *Infantile traumatic:* Mechanical injuries affecting the integrity of vital structures—brain, nerves, etc., with reflex convulsions in the beginning. *Infantile*

idiopathic: All cases in which we fail to discover any of the above causes.

In childhood and early life we have accidental, traumatic, developmental and idiopathic epilepsy. "Developmental" epilepsy embraces all that great class of cases which appear about the time of puberty. Delayed hereditary cases may fall under this head, the stress of metabolic changes at this time acting as exciting cause.

In adult life we have (1) accidental and (2) toxic epilepsy. The first embraces all cases due to syphilis, the infectious fevers, ovarian, uterine or sexual irritations; the second, alcoholic, intestinal toxemia, lead and other chemical poisoning. Traumatic and idiopathic epilepsy are the same here as in childhood; and finally we can list senile epilepsy which embraces those cases which are due to degenerative changes of the vascular system.

From the above it will be seen that nearly any derangement (inherited or acquired) which affects metabolism or the nervous system may either set up epilepsy itself or reflex convulsions which will (if unchecked) finally degenerate into the more severe disease.

Among the chief causes of epilepsy in the adult are alcoholism, cocainism, great anxiety, trauma (injuries to the head and severe crushing injuries), syphilis (through the brain lesions it sets up), gastric disorders, intestinal parasites and, in women, menstrual disorders and engorgements of the pelvic organs.

The period of puberty is, however, the most favorable time for the appearance of epilepsy. If the child of epileptic parents passes through dentition and puberty without any sign of the disease it is usually safe, though it is possible for childbirth or any of the causes mentioned above to bring on a seizure. One attack markedly predisposes to another, and it is essential that any treatment be instituted early.

In women the attacks often present during the menstrual period; they are apt to cease entirely during pregnancy and lactation. On the other hand, pregnancy may initiate the malady. A case is reported in which the woman had her first seizure during the second pregnancy and continued to have distinct attacks of grand mal during each succeeding term, from quickening till about a month after delivery.

In infancy the convulsions which attend teething may be epileptic in character from the first, or the ordinary type may be repeated and gradually assume the true epileptic nature. Such attacks may cease after dentition to be renewed at puberty. In fact the child who has had one epileptic seizure can never be considered as safe from further manifestation of the disease. Rachitis may be the primal cause of epilepsy. If therefore we prevent rachitis we can prevent epilsepy from developing, in a certain percentage of cases.

It should be remembered also that epilepsy in the infant may be associated with hemiplegia, the convulsions being confined to one side often. The first attack in such cases may be severe, convulsion after convulsion taking place for hours. Organic disease of the cortex is supposed to be the cause. Meningeal hemorrhage induced by difficult labor may also cause epilepsy.

The Symptomatology.—In *grand mal* (*haut mal*, or major epilepsy) the symptoms are so distinctive as to preclude error in diagnosis.

The patient may suddenly utter a moan, a sharp cry, or give vent to a "roar" and simultaneously fall to the ground. Frequently it seems as though he were hurled to the earth by some irresistible force. At other times he merely throws up his hands as though grasping at something and falls prone—often upon his face. That consciousness is lost instantly is proven by the frequent

cases in which the epileptic falls into fire or water or on to moving machinery. In fact wherever he may be, there, on the instant, he falls convulsed.

At first the body is rigid (tonic spasm), but later jerkings commence (clonic stage). If the surface is flat on which the epileptic falls the legs will be found extended, the head deviated and the eyes turned up or to one side. The arms may be stiffly extended or be twisted into any position with fists clinched. The teeth are firmly locked and it is difficult to pry open the jaws. Frequently the tongue is severely bitten.

The face, early, is pale, later it becomes red and finally livid or blotched and swollen. In the clonic stage the jaws may open and clinch again and it is then that tongue injury is most to be feared. Froth often appears on the lips and this may be tinged with blood from injuries to the buccal mucosa or tongue.

In some cases the spasms take on a writhing character, the patient twisting and turning or rolling over and over in the dust, but in other cases the limbs are drawn up and shot out with great force. The patient sometimes becomes opisthotonic, resting on heels and back of head or may assume exactly the reverse position. If he is held or opposed the spasms become more violent, and it frequently takes several able-bodied men to control a not remarkably robust male patient.

The pupils are widely dilated, and the breathing is irregular and stertorous or sighing and whistling. Often the sphincters relax and the bladder and bowel empty themselves. Hence the old Roman name of "the filthy disease." Both tonic and clonic spasms may last but a few minutes and the patient then lies quiet in a semicomatose condition, finally awakening entirely unaware that anything has occurred. He will, however, complain of pains in the legs and arms due to the severe spasms.

Vomiting may accompany or follow the fit, and various degrees of mental derangement may (or may not) persist for some time after the seizure. It is well to remember that in all cases of grand mal—whether there be preliminary symptoms or not there are three distinct periods: (1) tonic convulsions; (2) clonic convulsions; (3) period of coma with stertor.

The convulsion may begin in any part of the body (usually the arm or leg), the eyes are always involved, the face cyanosed—sometimes almost to the degree of blackness—and the reflexes are abolished. The "epileptic cry" is not always uttered though in some form it usually is apparent. It may be due to either the disturbance of the speech-center, or to the spasmodic contraction of the chest muscles which causes the air to rush through the vocal cords.

Petit mal presents a much less distressing picture. The muscular disturbance is infinitely less; the invasion is not so sudden and the mind does not become affected to the same degree. The patient recovers his normal, physical and mental condition in a much shorter period. For instance, the patient may be standing and suddenly sink to the floor, or stumble, totter a few feet and sit down. The arms may be swung and the legs jerk, or the patient may move about on his hands. The face becomes congested, mumbling and muttering occur, and some froth may gather on the lips. Cyanosis appears, then intense paleness, and the pupils are dilated. The mouth may be distorted and the eyes or one eye closed or half shut. The condition may last one or more minutes during which time any conceivable movement may take place.

Finally, the patient remains quiet, breathing heavily, and suddenly rises either to the sitting posture or direct to his feet. He may then walk about aimlessly, and incoherently mutter or talk in a disconnected manner.

This state may continue for from ten minutes to an hour or two, but usually in from three to five hours entirely normal conditions prevail. In petit mal the functions may not pass from control and there may be neither a cry nor aura of any kind.

One of the most important diagnostic points is the manner of falling. In grand mal the patient is *hurled*, as it were, to the earth or falls prone—often on his face; in petit mal he sinks down as though pushed and thus generally escapes injury.

The physician may see in his whole practice perhaps a dozen cases of epilepsy and it is unlikely that two of them will present the same chain of symptoms. The convulsive movements in petit mal may range from distinct general convulsions to purposeless smackings of the lips and snapping of the fingers. The patient may crawl and "search" the floor or become fixed in a distorted heap, with up-turned, wide-open eyes, set stare and flexed and rigid limbs. Quite often, after falling, the convulsive movement will begin around the eyes or in the fingers, the latter bending into the palm, the hand flexing on the forearm and the arm itself being then bent sharply across the chest—this in well-marked cases.

While it is not usual for the physician outside of an institution to see patients just prior to, during and after a fit he will, by judicious observation and questioning, soon be able to decide as to the character of the seizure. Old cases of grand mal often present lesions (especially of the face) caused by falling constantly on the same spot. A bromide eruption may exist if the case has been under treatment.

It is not the writer's purpose accurately to describe here all the various forms of epilsepsy. The Jacksonian type is, in his opinion, not true epilepsy at all but a convulsive condition of a group of muscles due solely to abnor-

mal conditions in the motor-area of the cortex. A tumor, for instance, may, by pressure, set up this condition. Finally, the brain-substance may become diseased and localized paralysis either take the place of or be added to the spasmodic affection.

Psychic Epilepsy is another phase of the disease which would require pages for even a partial consideration. The only point worthy of consideration here is the possibility that many of these conditions are not properly "epileptic" in character. There is a vast difference between the patient who presents the train of symptoms (or many of them) described above and the man who merely has periods of automatism or lapses of mental equilibrium. That the epileptic may also be thus affected is granted, but it is not essential that everyone who experiences "blanks," "dark periods," or "dual existence", should be an epileptic.

These cases require most careful study and it is possible that on receiving this they will be found to call for treatment entirely different from that which will apply in most cases of epilepsy of the ordinary types.

One of the peculiar and diagnostic features of an epileptic seizure is the aura. In eighty out of one hundred cases some prior motor, sensory or intellectual disturbance will manifest itself. The term aura means "an emanation from a body, surrounding it like a vapor or cloud," but in this connection it expresses the preliminary disturbance (whatever it may be) which marks the onset of a seizure. The ancients considered that a "spirituous vapor ascended to the head" from the veins of the extremities, unconsciousness ensuing as soon as the brain was reached.

The aura epileptica really marks the beginning of the attack, and the prompt administration of vasodilators (glonoin, amyl nitrite, etc.) might frequently abort it.

Strangely enough (it is said by writers upon this subject), sensory auras are more common in petit mal than in the more serious form of epilepsy. Visual auras predominate —flashes of light, rapid flitting of colors, "seeing stars," or even optical illusions of cats, dogs or other animals —but taste, hearing and smell are all apt to be affected.

This condition may precede the seizure proper but a moment or it may last for hours. Auditory auras consist of roaring in the ears, "sounds of the sea" voices, etc. In one case of petit mal reported, the patient first grunted and then whistled a few bars of a popular air before each seizure—on this particular day he had five. Complete deafness and blindness may occur. The epigastric aura is fairly common. Here there is a feeling of gnawing, crawling or tickling in the stomach which may later turn to a burning. A sour or astringent taste may accompany.

Pathogenesis of the Epileptic Seizure.—That these and other disturbances precede or accompany epilepsy is natural when one looks upon the disorder as a manifestation of the presence in the system of an irritant poison which acts primarily upon this, that, or other portion of the nervous system. That each explosion leaves behind it conditions better suited for the production of the toxin is evident, and, where the attack is of a pronounced form and nervous disturbances and muscular commotion are violent, a repetition is probable within a short period.

In this way the status epilepticus is originated. The system is so charged with the toxic material that its absorption is absolutely constant. Under ordinary circumstances the system rids itself during a paroxysm and immediately after of the morbid material (or it is possible, elaborates a neutralizing substance) but finally the metabolic processes generally become so deranged that normal functionating

practically ceases. The irritant poison is not carried as such *via* the blood stream, but is taken up direct from the medullated sheaths and becomes an inherent part of the nerve-cell; thus, if produced in any quantity, the entire nervous system labors under a profound intoxication.

If the various centers can be excited to an extent that causes an epileptic seizure by the stimuli carried by afferent (but healthy) nerve-fibers from the seat of localized (and limited) toxic areas, what must be their condition when this toxin becomes an integral portion of a great part of the nerve-substance throughout the body?

Paralyze or derange the nervous system, and immediately you have circulatory chaos; interfere with the circulation, and the elimination of effete matter becomes insufficient; permit retention of waste, and you once more derange the nervous system, and so there is set up a condition which in its worst form can be remedied only by death.

Thus it is that epilepsy, once established, is looked upon as incurable, and thus it is that the *status epilepticus* ends only when respiration ceases.

Spratling, in speaking of the epigastric aura, says: "Many patients suffer from indigestion, distention, gastric catarrh and flatulence. It seems now a problem as to whether these conditions precede or follow the initial manifestations of the fit. It seems rational to hold that while the flatulence itself may not induce the attack the *conditions which caused the flatulence may be to blame for it, for the reason that correction of the disturbances in the processes of nutrition often lessens or entirely removes the cause of the attacks!* All this points to the importance of studying chemic pathology as a cause of epilepsy—a prolific field as yet but little explored and less understood."

In these few words Spratling practically endorses the theory advanced by the writer—a theory which does not

by any means apply alone to epilepsy. In a recent study of that most remarkable product, lecithin, the fact was discovered that cholin (which belongs to the leucomain class and is closely allied to muscarine) may be split off from this substance (lecithin) under certain conditions.

This alkaloid, if injected into warm-blooded animals, promptly produces convulsions, and it is a fact that cholin has been found in the cerebrospinal fluid and blood of epileptics and others afflicted with nervous diseases. The presence of lecithin in the neurons is essential for the maintenance of normal functioning and in various nervous disorders this substance is decomposed. That cholin (a toxic and convulsant alkaloid and one of the component parts of lecithin) is split off in certain pathological conditions is known to be the case.

Have we not here the very toxin which sets up epilepsy? The effect of this toxic substance would be to set up increased excitability of the cerebral cortex, and the whole train of symptoms (varying according to the severity or location of the toxemia) which we term an epileptic seizure would ensue.

Degeneration, shock, trauma, fatigue, alcoholism, sexual excess—all these and a score of other things which produce "nerve exhaustion"—are given as being causative of epilepsy. In certain conditions of nerve-strain the lecithin ordinarily supplied for repair becomes decomposed, and one product of such decomposition is cholin—a convulsant alkaloid. That epilepsy follows is but a natural sequence.

It is unfortunate that we are unable to test the soundness of this theory promptly and settle its correctness once and for all time. The only method of doing so, however, is to treat a large number of cases of various degrees of severity and length of standing and draw our conclusions from the results as a whole. That one case or two improve

under treatment means nothing, but if a score or a hundred epileptics cease to have seizures upon the reestablishment of normal metabolic conditions and a sufficient supply of lecithin, then surely we may safely consider our theory correct and our method of treatment satisfactory.

And here, after all, comes the *crux* of the whole question. The treatment of epilepsy has heretofore been such an uncertain quantity that no two physicians pursue similar methods. To induce them to lay aside all preconceived ideas and treat not epilepsy but the conditions which give rise to it is an almost impossible task.

In Merck's "Handbook" (1905) no less than seventy-five remedies for epilepsy are given. The homeopaths have a score or two more, and the eclectic school can offer some additions to the list. But the average man uses the bromides in some form and most authors recommend them; some in small and others in massive doses. Why?

Because they act "as a distinct depressant to the motor and intellectual portions of the cortex cerebri."

Because they "slow the development of thought and decrease the excitability and power of the motor-cells of the brain" (Albertoni).

Moreover, the bromides depress the circulation. This should be remembered, as the danger of such depression will be pointed out later.

Now, does it not look as though the bromides were given much as morphine is exhibited so to benumb and deaden the centers that nature's protest against existent abnormal conditions may not be observed? Would it not be more rational rather to seek and treat the cause of the motor excitability, etc., than so to benumb the tissues that they refuse to act even under the stimulus of the toxin? Moreover, is it not evident that, some metabolic derangement existing, it is essential that we keep open every eliminative channel?

If we depress, directly or by reflex action, the renal nerves, we contract the arteries, lessen the flow of blood through the glomeruli and thus cut off elimination of urine. Moreover, it is a fact that prior to an epileptic attack the urine is devoid of uric acid and is otherwise abnormal. Is it not then entirely wrong to depress the nervous system for long periods and thus aid in the retention in the system of waste products?

It matters not where or how the urinary solids are excreted; depression means non-activity of the renal epithelium and a lessened flow of blood through the renal arteries. This condition can only mean a deficiency in the urinary output —aqueous or solid—and if we need anything in epilepsy it is *elimination*. Moreover, hepatic activity is lessened by the exhibition of the bromides, and if we need anything in metabolic disorders (epilepsy) we do need an efficiently acting liver. The bromides cause a "specific eruption" —they lessen elimination *via* the sudoriferous glands. In epilepsy we need elimination.

It is not necessary to carry the argument further; any man with even a bowing acquaintance with physiology and pathology will see the absurdity of the thing!

What we must do for the epileptic (and bear in mind that even under proper treatment results can only be obtained when degenerative changes have not progressed too far) is (1) to set up normal metabolic conditions, i. e., improve assimilation, elimination and circulation; (2) prevent the formation and consequent absorption of toxic matter in the digestive tract; (3) offer in a form ready for immediate assimilation the substances without which the neurons cannot functionate—lecithin; (4) maintain by the use of non-injurious remedies nerve-equilibrium and rest; (5) prevent cerebral excitation without depressing the cord; (6) insist upon a normal habit of living, and finally, (7) utilize suggestion to its fullest extent.

There are perhaps many ways of doing all this, but as is usual, some one way will prove better than the others and the writer has for some time past been working out a line of treatment which has proven effective, generally applicable and capable of administration anywhere.

Every therapeutist will recognize the fact that each case will require special study and the modification of treatment to meet the exact conditions present. It should also be understood that treatment must be long and faithfully followed and that any excess, exposure or improper act may cause an entire loss of the benefit secured. Finally, it cannot be too strongly pointed out that failures will occur even in the most skilful clinician's experience and the average practician who thinks that to buy the drugs named and order their exhibition may be sufficient is foredoomed to disappointment.

Treatment.—An epileptic case presenting, familiarize yourself with the history and minutely examine him physically. If there be a history of epilepsy in the family and signs of degeneracy in the patient, be very guarded in your prognosis and, while holding out hope of improvement, say nothing which will lead to an expectation of cure.

If the case is due to trauma (and the seat of lesion can be ascertained) a competent surgeon should pass upon the possibility of surgical relief. Abnormalities (gastric disorders, ocular defects, worms, phimosis, adherent clitoris, constriction of sphincter ani, etc.) should be corrected. Many cases of epilepsy are due to some reflex irritation and if the source of this is found and removed the disease promptly disappears.

Cases with marked mental taint and very aged or dissipated patients should be rejected, or at best accepted conditionally. Cases of grand mal will require the supervision of an intelligent attendant, and here again the prognosis must of necessity be guarded.

In cases of moderate severity occurring in comparatively young and normal patients this treatment should be instituted:

A mild laxative and hepatic alterative course (preferably small doses of calomel with gr. 1-6 of iridin—iris versicolor) should be exhibited hourly for four hours every third night. The next morning upon first awakening the patient should take a full dose of effervescent sulphate of magnesium in half a pint of hot water. The same night he should take an enema of two full quarts of *hot* saline solution. Each night and morning he should be sponged off with cool salt water, then with plain water, and finally rubbed with alcohol and polished off with a rough bath towel.

On awakening, cactin, gr. 1-67, quassin, gr. 1-6, and juglandin, gr. 1-6, should be taken, and this medication must be repeated thirty minutes before each meal. The action of cactin is to strengthen and increase the nutrition of the heart-muscle, thus improving circulation without whipping the organ. Quassin is a bitter stomachic tonic, increasing appetite and improving the condition of the gastric mucosa, and juglandin exerts somewhat the same action and also stimulates glandular activity and increases the flow of bile.

Between meals (and this is the most important part of the treatment) a good preparation of lecithin must be given. Neuro-lecithin has so far given the most satisfactory results. One tablet constitutes a dose and this should be crushed and swallowed with a little water. One hour later boldine, gr. 1-6 to 1-3, should be exhibited with solanine, gr. 1-67. This dose *must* be gradually increased. The action of lecithin upon the system is too complicated to be explained here, but, from the remarks preceding, it will be understood that this substance is essential to the neurons and that its absence or deterioration means nerve

disorder. In epilepsy it appears to be decomposed and one of its component parts, cholin, a convulsant alkaloid (leucomain), is "split off" and probably causes the epileptic state.

Boldine is a most remarkable drug, acting not alone as a diuretic but also as a cholagog. It increases the output of urea, and flow of bile, and exerts a peculiar hypnotic influence upon the nervous system. It does not in any way increase the amount of urine, neither does it affect the circulation.

Solanine (from Solanum carolinense) has been for some time highly extolled as a remedy in epilepsy, but its action has not been thoroughly comprehended. It does, however, undoubtedly depress the cerebrum, while exerting a somewhat stimulative action upon the cord. At present the writer is giving this drug as above for one week and then substitutes the next week, verbenin (from Verbena hastata) in doses of gr. 1-3 to gr. 1.

Verbenin controls the convulsions in petit mal with marked positiveness but does not in any way affect the system injuriously as do the bromides. It has, too, a sudorific action and seems to increase glandular activity. Under its administration old and severe gastric irritations have disappeared and several dry-skin patients have come to perspire naturally. Here, it is likely, lies its value in this connection.

Finally, it is advisable to administer, after food, gr. 1-3 or more of papayotin with or without capsicum. This ensures the digestion of the food and an emptying of the stomach within a reasonable period.

Salt smoked meats, fats and all indigestible foods are prohibited. Fruit is ordered each morning with a well-cooked cereal and an egg or chop. Old bread (preferably whole-wheat or brown), crackers or zwieback are permitted, but no pastry or hot bread or rolls. Celery, onions,

watercress and asparagus may be eaten freely, but turnips, dried beans, and potatoes, should be avoided. Tobacco, coffee and alcoholics are absolutely taboo.

One-half pint of water or milk must be taken with each meal and nothing save medicine swallowed between times. The patient requires eight hours' sleep (ten at most) and should retire early, rise early and get out into the open air. Deep breathing is beneficial at this time. Sexual indulgence should be prohibited (or practised with great moderation) and boys and young women should have the danger of certain habits explained to them.

Finally, study by artificial light is to be prohibited, as is mental work for one hour after food. Anger, worry and gloomy surroundings are to be avoided. Under this treatment the attacks will lessen in number and in favorable cases cease.

When an aura (well marked) is apparent to the patient he should, on its appearance, take gr. 1-250 of atropine and gr. 1-250 of glonoin and repeat this in fifteen minutes. Or, if the fit is on, the inhalation of the fumes of amyl nitrite will often suppress it. The patient should carry the *perles* (holding five minims) and break one in a handkerchief, inhaling the vapor. If he cannot do this his friends should be advised to do so. It has been found an excellent plan to exhibit the glonoin and atropine at four-hour intervals for twenty-four hours prior to an expected attack (in periodical epilepsy), and twice the writer has broken up a series of seizures (petit mal) by giving a hypodermic injection of apomorphine.

In the above treatment no provision has been made for cases which are known to be due to syphilis. For instance, if the epileptic adult confesses to a luetic taint he should be placed at once upon an antisyphilitic treatment, and in these cases a combination of mercury protoiodide, stillingin and the arsenates of quinine, iron and

strychnine will prove especially efficacious. This formula has been recommended for some time and clinical tests have but served to prove its infinite superiority over mercury and potassium iodide.

In children who possess a straight history of inherited taint, or in those who show signs of lues, the same course of treatment (modified to suit the age of the patient) will be imperatively called for. At the same time treatment for the epileptic condition should be continued.

One of the best methods of combining the medication is to exhibit with the "digestive" tablet (after meals) one-half, one or two of the compound tablets containing mercury protoiodide, stillingin, quinine, iron and strychnine arsenate, and nuclein. For children under five, one-half tablet is sufficient; from five to twelve, one tablet may be given three times a day, and an adult may take one for two weeks, then two for an equal period, and then return to one for a month. A rest of ten days should then be taken and the course repeated.

A Final Word

In describing this method of treating epilepsy which has so far proven invariably successful in my own practice, and that of my associates, I feel that a word of warning is necessary. Epilepsy remains a hydra-headed and treacherous disease and the most perfect treatment must still be administered with due regard for the individual, the peculiarities of the case and an intelligent perception of the action of each drug. The doctor must *work* if he would win success; it will not suffice merely to load the patient up with the drugs properly labelled and then consider the work accomplished. The most careful examination must be made before the case is even accepted and (as already pointed out) every remediable lesion must be attended to. Dilation of the sphincter ani is nearly always

desirable; adenoids should be removed and uterine or menstrual disorders corrected. *Elimination must be maintained* throughout and the urine should be examined from time to time. Hygienic living should be insisted upon and the daily salt sponge-bath is usually essential. Graded physical exercises and deep breathing will help wonderfully—especially when the patient is a child. Outdoor life is always desirable.

Insist upon the patient entering upon a *three month's course;* see him daily if possible for the first two weeks, and *within twenty-four hours after a seizure* always. Remember to order a return at once to the *maximum dosage ever given* upon the recurrence of a fit after a period of quietude.

Always begin with the smallest doses, *after eliminating;* increase gradually till the usual time for seizure has passed without any sign of trouble; then gradually reduce (if no fits occur) till the minimum dose is being again used; now should a seizure occur, *immediately* resume maximum dosage and maintain it for three days, then reduce again. This course is continued till a month or more has elapsed without a seizure. The dosage of verbenin (maximum)is grs. 4 per diem; solanine may be given up to gr. 1-10 every four hours. For children under five years, gr. 3-67 three times a day should rarely be exceeded. Scutellarin may be pushed even to grs. 2 at a dose. Atropine and glonoin should only be used to *stop* a seizure—one to two of the compound glonoin and atropine granules. Neuro-lecithin cannot injure, but is rarely useful in greater amount than one tablet three times daily. Children, one quarter tablet, then a half, then a whole one. The other drugs are harmless and should be used to "effect."

Boldine especially should be pushed where hepatic torpor is marked or the stools are abnormal in color or quantity; after using this drug a few days it is often well to rest for

two days, then repeat its exhibition. Unceasing care and intelligent modification of the medication will prove productive of results always. If the effect is not exactly what it should be, carefully review the situation and examine patient and urine; the fault will generally be found to be insufficient elimination, or *enervation*. A supply of amyl nitrite *perles* should be given the attendant with instructions to break one in a handkerchief and promptly apply this to the nose and mouth of patient at first sign of a seizure. Most "fits" can be cut short by this procedure. In positively rebellious cases give, night and morning, grs. 5 of the "triple bromides" (in solution) and continue until at least four seizure periods have past. Then gradually decrease the dose, discontinuing entirely after a week. This serves to "check the habit" and the psychological effect upon the patient is well worth securing.

CHOREA (ST. VITUS' DANCE)

This is a peculiar and not uncommon disease which is encountered more often in girls of five and upward than in others. I have seen it come on at fourteen. There are irregular, entirely inexplicable movements of the muscles, which may be partially controlled for a time only to reappear with renewed violence later. No distinct lesion has been discovered, but endocarditis is a frequent complication. Overwork at school, an attack of rheumatism or even a fright often seem to be a cause. The children usually are anemic and a decided lack of muscular development is to be observed. The reflexes are increased in some patients, diminished in others.

First of all, the child begins to do awkward things and to trip or stumble more or less, mumbling of words occurs, and irritability is frequent. Then twitchings or jerkings attract attention or entirely purposeless movements of the hands or legs will be noted. The child may twitch

an eye, make a grimace or flourish an arm, doing this often or seldom but always repeating the movement. In a pronounced case the unfortunate patient is practically never still: the head jerks forward or sideways, the shoulders are shrugged and the hands twitch. Things are not dropped however and, peculiarly enough, a cup can be conveyed to the mouth without spilling the contents. After a moment's preparation quite a few words can be written without a jerk of the hand. The disease may persist indefinitely if untreated; under proper care, however, it may disappear in a month. Relapses must be guarded against.

Treatment.—Put the child with a sympathetic but firm nurse and order *rest*, with rhythmic exercises of the muscles (those affected, especially) at short intervals. Give a plain, nutritious diet, and keep the bowels active. Salt sponge-baths daily, and massage (also vibration if possible) of the spine and limbs.

The medication consists of one-half to one granule of veratrine every two hours till sedation. Very minute doses of codeine will prevent vomiting (give only if nausea is complained of). Scutellarin, gr. 1-3, macrotin, gr. 1-6, avenin, gr. 1-2, every three hours; juglandin, gr. 1-6, prior to meals, and zinc phosphide, gr. 1-67, after eating. Passiflora incarnata at night—dose enough. This will cure most cases; the veratrine usually is given for a full thirty-six hours. It may have to be repeated. If the case drags, push picrotoxin "to effect"—remedial or physiological—then exhibit cicutine for some days, one granule every four hours. In rare cases a few doses of atropine valerianate, followed by cannabin, will stop the habit-spasm, and if the arsenates with nuclein are given after each meal, and scutellarin and avenin are pushed between meals, the disorder should not return. In all cases it is essential to continue tonic treatment after the

chorea has disappeared for a month at least. The older child should be taken from school and sustained mental effort forbidden. Outdoor life and active exercise (moderate at first) mean much. If the patient can be taken off to the woods and allowed to return for a few weeks to "primitive methods of living" a cure will almost assuredly follow.

CHAPTER XIV

DISEASES OF THE SKIN

RINGWORM (TRICHOPHYTOSIS)

Trichophytosis barbæ (barber's itch) and ringworm are closely allied, but the latter disease is much more easily controlled, save in its more stubborn form, which is met with only in institutions and among those who are unfamiliar with soap and water.

Trichophytosis corporis makes its appearance upon the face and limbs of children generally, the forehead or nape of neck seeming to be favored locations. The disease is infectious in a very marked degree and children suffering from ringworm should never be allowed to wear other children's caps or use a common brush or comb. In cities those affected are debarred from attending school.

The trichophyton fungus may invade the epidermis of any part of the body but it unquestionably finds a more suitable soil where debris accumulates or where more or less abrasion of the cuticle has occurred. The newly shaven skin, the scalp and exposed neck, face and arms are therefore the usual sites of the annular or circular patches which are so well known as to need no description. "Barber's itch" needs no mention here either, but it may be well to state that the treatment recommended for ringworm of the scalp cures barber's itch equally well.

Trichophytosis corporis (tinea circinata) is easily controlled and the laity destroy the "worm" with applications of ink, sulphur and lead water—meeting with more or less success, usually less. Unless the child is unusually well supplied with hair on the affected area it is not necessary

to shave the part. It should be well washed once with ethereal tincture of green soap (scrubbing lightly to remove scales) and then twice daily with carbenzol soap or an equally active soap. The compound tincture of benzoin may then be painted on or the area covered with resorcin, grs. 20, to vaseline, oz. 1. Carbenzol (pure) will also be found efficacious. Soak a piece of lint, apply, and cover with a slightly larger piece of rubber tissue, then bandage. In the severer forms or where a great portion of the body is involved (do not mistake seborrhea for ringworm), it is well to use twice a week a solution of mercury bichloride (4 grains to the ounce of alcohol and water, equal parts), rubbing in lightly, drying and then applying the tincture of benzoin or carbenzol.

In the inflammatory type, which invades the axilla or groin, iodine proves most desirable: 30 grains of iodine crystals are rubbed up well with one ounce of goose grease and the ointment applied with a stiff brush each night. This preparation will perhaps be used more often than any other in all varieties of ringworm once its merits have been discovered. Betanaphtol, eucalyptol, and carbolic acid are all to be relied upon. Sulphur alone is not entirely satisfactory. A strong solution of calx iodata (20 grains to hot water, one dram), if painted on a ringworm patch three times daily (after the preliminary green-soap scrub) will cause its disappearance within four days. In ringworm of the scalp it is well to shave thoroughly the affected area before beginning treatment. Ringworm of the face may be most satisfactorily treated with the foregoing solution.

Internal medication will consist of blue mass and soda, gr. 1-2, and iridin, gr. 1-6, hourly for four doses every other night for a week, and arsenic sulphide, gr. 1-67, after each meal. Calcium sulphide, gr. 1-6, six times daily. I have found it extremely desirable to give all the children in the family (affected or not) a creolin bath twice weekly. The

patients should bathe *last*. Here as elsewhere the creolinated solution of magnesium sulphate works perfectly.

ECZEMA

Unfortunately the term "eczema" is used to describe a variety of dermic disorders which really require entirely different treatment. "Dry" and "weeping" eczemas cannot possibly yield to the same procedures, and the physician who does not fit his remedies to the conditions present is bound to meet with grievous disappointment.

Infantile eczema deserves special attention together with eczema pustulosum—the variety most commonly met in pediatric practice. The head and face suffer most severely. It is well to remember that eczema may be acute, subacute or chronic; the subacute variety having a tendency to become acute at any time, and each of the former readily becoming chronic.

All eczematous conditions present toward the last a squamous stage. The reproductive processes of the skin are incomplete and thin scales of varying size constantly separate from a red, dry skin. There is some itching and a constant tendency to recrudescence. This must not be mistaken for a variety of eczema (though the erythematous type "dry eczema" presents very similar features) and every care should be taken to avoid the use of medications capable of increasing irritation. Someone has said that the physician "who can recognize and properly classify the various forms of eczema and syphilis has dermatology at his finger's ends," and those who have had the most experience with the two diseases realize best how very near to truth the statement is.

However, with the exception of eczema erythematosum (usually met with on the face of an adult) we may safely say that eczema is a non-contagious inflammatory disease of the skin, due, probably to a depraved condition of the

blood in the first place and to local circulatory derangements in the second. Autointoxication is unquestionably the main cause, therefore elimination and the restoration of organic activity is the main remedy.

The features usually present are redness, more or less swelling, infiltration, desquamation, and a copious serous (or purulent) discharge. Itching, burning and an unbearable stinging sensation are experienced by the patient. Scratching causes deep excoriations and the formation of foul scabs. In many forms deep fissures appear in the skin (eczema fissum) and in all the eczematous patch gradually spreads into the healthy skin, and several widely separated areas may thus coalesce forming, one enormous lesion.

In not a few cases of acute eczema the little patient may show signs of constitutional disturbances—malaise, fever and diarrhea are not at all uncommon, and where the surface involved is extensive the child may be bedridden for some time.

The main points to remember are the necessity for local and constitutional treatment: the positive avoidance of soap and water in the acute and subacute forms and the skilful application of the right remedies at the right time.

Treatment.—First and foremost examine the urine and make a careful study of assimilative and eliminative conditions. Put the patient on a carefully balanced diet, allowing little meat (no pork or salt meats whatever), but plenty of fruit, vegetables, green salads, eggs, milk, and fish (fresh). Have the entire body (avoiding affected areas) sponged thoroughly at night with the creolinated epsom-salt solution, and in the morning let the patient have a brisk rubdown with a dry towel. The child must sleep alone and have entirely separate towels, etc. I have found one of the most grateful baths to consist of a double handful of wheat bran boiled in a gallon of water, to which, when strained, is added four ounces of magnesium sul-

phate and a dram of creolin. Outdoor exercise is essential and perspiration may be encouraged.

In the early stage of acute eczema the use of lotions and dusting powders will prove preferable to salves. A 2- to 3-percent solution of resorcin may be applied several times daily to the affected area, or a saturated solution of boric acid. The dermal antiseptic powder (Abbott), 1 part, and rice, flour or talcum, 3 parts, makes an excellent application, as does also dolomol-ichthyol. At night carbenzol should be applied, either pure or reduced with pure liquid petrolatum. As a matter of fact, when the part affected is out of sight or the child is confined to the house, carbenzol will be the best preparation of all throughout. Another really excellent preparation easily obtainable is glycobenphene. This is a strongly antiseptic fluid containing boric and benzoic acid, phenol, eucalyptol, etc., together with a large percentage of zinc oxide, the latter being deposited upon the skin as a fine powder. I have found this a very satisfactory application in facial eczema and eczema of the hands. Dermatol also deserves mention.

Where very large surfaces are involved and the patient cannot use ill-smelling or discoloring lotions, half an ounce of the fluid extract of grindelia robusta to the pint of water will prove useful and agreeable. Thuja (aqueous) is also well worth trial in the "moist" forms. Carbolic acid is *not* to be used in the acute stage. As already stated, ointments are rarely desirable in acute eczema, but occasionally we may have to use them. Carbenzol ointment will give ideal results, and next in point of utility is zinci oxidi, drs. 2, acidi salicylici, grs. 10, amyli, drs. 2, lanolini, drs. 4. In pustular eczema Lassar's paste with 10 grains of salicylic acid added to the ounce will prove effective. In eczema of the scalp in young children use one dram of bismuth subnitrate to the ounce of rose water, and ten drops of creolin.

Where the case has been neglected and crusts have formed or pustular eczema has developed it may be necessary to cleanse the parts with soap. Use here a strong suds of carbenzol soap or tincture of green soap, but only as often as may be positively necessary for cleanliness, then dry well and apply whatever medication you may use on the softest lint or gauze. Fluid petrolatum or olive oil will serve to remove ointments and ordinary effete matter.

Extreme itching will yield to a few applications of campho-menthol or to cloths wrung out of a *hot* creolinated solution.

In a few cases of weeping eczema the exudation of serum is so great as to cause weakness: alumnol, 10 grains to one ounce of vaseline, or a 10-percent solution of alum applied on cloths will stop the discharge. The aqueous preparation of thuja (Long's formula) also applies in such cases. In a most rebellious aural eczema cure followed (within a week) the application twice daily of a solution of silver nitrate, 6 grains to the ounce of water.

These various preparations are mentioned because the medication which will promptly control one eczema will seem to aggravate another. However, from the list given the right thing can be found for almost any case of acute eczema. In nine instances out of ten carbenzol and a good dusting powder will suffice. In most cases avoid lard; if used at all, prescribe it dehydrated and benzoated. In pustular eczema nothing equals thymol iodide in oil (euarol) applied on gauze after a thorough cleansing with creolin solution of carbenzol suds.

Internal Medication.—In acute eczemas this is important and alone suffices in many instances to cut short the attack. Calomel, gr. 1-6, iridin, gr. 1-6, xanthoxylin, gr. 1-6, is given hourly for six hours every third evening, and in the morning a saline draught (magnesium sulphate)

is exhibited the first thing. Between meals stillingin, gr. 1-6, rumicin, gr. 1-6, alnuin, gr. 1-6, should be exhibited (echinacea, gr. 1-2, taking the place of alnuin in pustular cases). Immediately after food arsenic sulphide, gr. 1-67, and an hour or so later, grs. 2 to 5 of calcium sulphocarbolate with half a glass of water. Children under three will receive one-third the doses mentioned. After a week one "triple arsenates" tablet should supplant the arsenic sulphide, returning in a week to the former.

Subacute Eczema

In subacute cases pure carbenzol, or carbenzol ointment and resin cerate, equal parts, will prove efficient. Equal parts of carbolic acid and menthol crystals may be triturated together and one part of the resultant fluid added to two parts of pure fluid petrolatum. This is a most desirable application and stops pruritus instantly. Or goose grease may be substituted for petrolatum. A 2-percent solution of potassium permanganate will promptly control most subacute cases, and if staining does not matter, a saturated solution of picric acid does even quicker work. Picratol, a new and active silver preparation offered by Wyeth, has given me good results. Salicylic acid ointments (2- to 15-percent) give good results in subacute erythematous eczemas. Use vaseline and lanolin as a vehicle. I prefer to add 5 to 10 grains to the ounce of carbenzol ointment.

In these cases the internal medication is similar to that already suggested, but it is well to give iridin in full doses (gr. 1-6) three times daily, and the triple arsenates with nuclein after meals, dropping arsenic sulphide. Nuclein, gtt. 6 to 10 t. i. d., will often prove highly beneficial. One granule of rhus toxicodendron (gtt. 1-10) morning, noon and night has given some remarkable results both in acute and subacute eczema: give it especially where the skin is red

and vesicles are apparent; marked stinging and burning are also indications for this drug.

In *dry* eczemas—or the dry stage of any eczema—do not forget pilocarpine, gr. 1-67 three to four times daily.

Finally, in the subacute form and chronic conditions push the "sulphur-laxative" formula—three to four granules after meals—on the days when other laxatives are not given.

Chronic Eczema

Here great care must be taken, especially with children, not to use too stimulating medications. Ol. cadini, dr. 1, ungt. zinci oxidi, oz. 1, will prove especially useful; carbenzol, full strength, will also be of service. In obstinate, "leathery" conditions rub in oil of cade every other day, and twice daily apply carbenzol. An excellent formula for chronic eczema is picis liquidæ, dr. 1-2, pulv. zinci oxidi, dr. 1-2, ungt. aquæ rosæ, oz. 1. Also excellent is sulphuris precipitati, dr. 1, picis liquidæ, dr. 1-2, ungt. zinci oxidi, oz. 1.

Some Suggestions

In eczema of the face apply a light linen mask, but never allow it to become hard and dry, as it would irritate frightfully. This is suitable when *ointments* are used. Separate the folds of the skin with gauze (lubricated) and remove all scales with olive oil or petrolatum before medicating. Look out for "caking" of dusting powders, and be sure to remove all hair from affected areas.

If fever is apparent in acute cases, gelseminine in small doses with saline laxatives will be the remedies.

Small patches of eczema about the mouth or face may be treated with *pigments*. Iodoform-collodion (or thymol iodide) may be applied to pustular patches, and to squamous areas the following: ol. cadini, dr. 1, collodion (or traumaticine), oz. 1. Chrysarobin-collodion, 10-percent, is also of value here.

In eczema of the ano-genital region try a 4-percent solution of methylene-blue. It soothes instantly and speedily cures. Apply twice or thrice daily. Cleanse the parts very carefully with cotton and olive oil after stool. Put the hands of small patients in mitts or bags to prevent scratching. Be positive in your orders about sweets and pastry: children with eczema *must not* eat pastry or candy.

In the rare cases of eczema rubrum affecting the legs, rub in green soap well, wash off, dry, and apply unguentum vaselini plumbici (or carbenzol) on strips of mull, then over all place a woven elastic bandage. In horny thickening of the palms the use of green soap is desirable also. Apply on cloths at night, cover with rubber tissue and bandage and repeat till the skin softens. Then use the tar ointments.

Eczema of the nares is a nuisance which often exasperates the best physicians. In nine out of ten cases a rhinitis complicates and we must cure this before the eczema will yield. (See "Rhinitis.") Remove crusts with olive oil and then apply glycerite of lead subacetate and unguentum aquæ rosæ, equal parts, thoroughly. Carbenzol ointment will cure quickly also. I have made small rolls of paper, or cut quill toothpicks the right length, covered these with lint smeared with the ointment and inserted them into the nostrils, with astonishing success. *Do not use alkaline fluids now.* Ungt. hydrargyri oxidi flavi serves well in these cases.

In universal eczema keep your patients in bed and give the epsom-salt bath at night, then apply thoroughly carbenzol, or acidi carbolici, dr. 1-2, glyceriti amyli, ozs. 4. Dry the skin first.

In *eczema seborrhœica* solutions of resorcin will prove preferable always. Remove crusts and apply compresses soaked in a 6 : 1000 solution. In hairy parts

use resorcin, dr. 1, alcohol, oz. 1, water, oz. 1. Redress every four or six hours.

IMPETIGO

This disease, peculiar to childhood, is contagious and often epidemic. It seems to be autoinoculable. Fehleisen's streptococcus is the specific organism. The disease is self-limited, the lesions lasting from nine to fifteen days; fresh crops are, however, liable to appear, scratching being constant. The face is usually affected, with, perhaps, the neck. Well-fed and cleanly children are not likely to present impetigo unless they contract the disease at school or on the street. Constitutional disturbances are slight, if present at all, though it may be surmised that a lowered resistance makes the appearance of any skin disease due to parasitic invasion more probable. It is not rare, however, to note considerable swelling of the glands in cases of impetigo, but this disappears with the lesions. Itching is usually marked.

The primary lesion is merely a reddened spot near the corner of the mouth, the nostrils, the ear or on the forehead. It is very slightly elevated and attracts little attention. Within twenty-four hours a bleb forms, quite superficial and wrinkled. This is ruptured and the serum exuding in considerable amount dries and forms a thick golden-yellow scab. There is little, if any, inflammatory areola, and the scab appears to be stuck upon sound skin. If the child picks off these scabs, deeper lesions may follow and secondary infection occur. As a rule, however, the discharge remains serous, and though many lesions may be present (several may coalesce, thus causing the formation of quite extensive crusts) no destruction of tissues occurs. The crusts dry and finally fall off, leaving a reddened surface which slowly assumes a normal appearance. Lesions sometimes persist about

the alæ and corners of the mouth; in the latter situation fissures may result and prove troublesome.

In rare cases the hands and body are invaded. Behind the ears however we shall often find the worst lesions. If the scalp is involved, the hair becomes matted and a very disgusting condition results. Later the hair falls out (if not clipped early) but regrows in a week or two. The peculiar "dried-honey"-like crust and absence of areola will enable the physician to distinguish impetigo from eczema pustulosa and ecthyma.

Treatment.—This is simple and very effective. Remove all crusts with carbenzol soap and warm water (or ethereal tincture of green soap), dry, and then again bathe well with a saturated solution of boric acid. Dust thoroughly with europhen, aristol or dermatol during the day (or use a powder of dermal antiseptic, one part, and rice flour, two parts), and at night apply carbenzol on squares of lint. If ulceration occurs, cleanse with pure hydrogen peroxide, paint the dried lesion with oil of turpentine (Merck) and apply euarol on lint. In a few instances the amount of serum exuding will be large, and here a solution of zinc sulphocarbolate in camphor water will have to be dabbed on several times daily. Twenty grains of zinc sulphocarbolate to the ounce of camphor water suffices. Of late I have found thuja a thoroughly efficient remedy. The aqueous preparation may be applied every three hours. If blebs are present, cut away with fine scissors and apply the lotion or thuja. No further trouble will follow.

URTICARIA (NETTLE-RASH)

"Hives" are encountered quite commonly and usually mean disordered digestion and faulty elimination. However, derangements of the capillary circulation (wet, chilling, etc.) may originate the eruption. The child

will often have a preliminary or coincident fever, which of course is due to the systemic disturbance causing the urticaria. It is unnecessary to describe the lesions, which may appear singly, in numbers, or in successive crops. The face, neck, shoulders and thighs are the parts usually affected, though the chest and abdomen sometimes suffer. The red wheal slowly fades and becomes white. Within an hour several crops may have come and gone. There is stinging and most intense itching in every case. Certain articles of food produce urticaria in some individuals.

Papular urticaria (strophulus, lichen urticatus) is a variety of the disease which affects young, illy nourished children. Here small millet-seed-sized papules appear and persist for days, causing restlessness from the distressing itching. As the tops of the papules are scratched off, bleeding occurs and scabs form which leaves pigmented patches on falling.

Treatment.—Suspect worms and parasites always; examine the urine and look into the child's diet. If the stomach is overloaded, give an emetic dose of apomorphine (hypodermatically) and sponge the entire body well with a saturated solution of epsom salt, adding ten drops of carbolic acid to the pint. This is *the* best lotion for *all* urticarial cases. It is well to apply compresses wet with the solution to the affected part. Give a full dose of blue mass and soda (gr. 1-2 to gr. 1) every half hour for two hours and add iridin, gr. 1-6, to each dose. Every fifteen minutes give one granule of rhus toxicodendron, stopping when four or six have been taken. I wash out the bowel with decinormal salt solution, and always give the child 1 grain of lithium benzoate three times daily for three days, and a saline laxative draught each morning for one week. Do not allow acid fruits for a time and order a light milk and cereal diet. Rhein, gr. 1-6, and

one to three sulphur laxative tablets after each meal will complete the "specific medication"—for such it really is.

Of course the underlying abnormalities will receive proper treatment. Dolomol-camphor makes an excellent dusting powder, or if itching persists, camphomenthol or menthophenol (menthol and carbolic acid crystals rubbed together in a mortar—one part of the resultant liquid to two of fluid petrolatum) may be rubbed in. The epsom-salt solution however suffices in most cases.

SCABIES (ITCH)

True scabies is not frequently encountered, but when it is, a cure is imperatively demanded. Saturate the patient with calcium sulphide (gr. 1-6 hourly), keep the bowels open with sulphur laxative and salines, and proceed as follows: Strip the child and boil its clothing in a carbolated solution. Into a tub pour five gallons of hot water; put the child in and with a fairly stiff nail brush and plenty of sulphur (sublimed) scrub the entire skin, especially the lesions, washing off and repeating this procedure for half an hour. Use the sulphur freely. Dry the child and put him into underwear into which sift more sulphur—plenty of it! In twenty-four hours repeat the bath, then apply carbenzol (pure) to each affected area, rubbing it in, and repeat the application every four hours. In two days give a plain hot bath and put on clean clothes. The "itch" will have disappeared. "Prairie itch" yields to one such bath and carbenzol.

APPENDIX

THE TONGUE AND ITS APPEARANCE IN DISEASE

Since the approaching publication of this book was announced, several requests have been received for the consideration of certain subjects. For instance, one correspondent asks that diet lists suitable for the acute diseases should be given in detail. Another desires that the indications for tracheotomy and intubation be given and the technic of each procedure described. Still another writer suggests that the tongue receive special attention; the various conditions of this organ being described and their diagnostic significance pointed out. Much as the writer should like to comply with these requests he finds that the originally agreed upon scope of the book has already been greatly exceeded, and to give the subjects mentioned proper attention would require space and time not now available.

However, I have given the essential indications for tracheotomy and intubation, and now add an imperfect but still useful *Classification of Tongue Symptoms*. It must be remembered that the tongue may present similar peculiarities in entirely different diseases; indeed, with some well-known exceptions (the "liver tongue" and "strawberry tongue" of scarlet-fever for example) the tongue cannot be said to offer constant abnormalities in any disorder. Given certain systemic derangements, we may or may not find certain peculiarities of the tongue; if present, they aid us, when considered with other symptoms, in making a diagnosis, but in few cases indeed will the tongue alone enable us to arrive at a decision.

A cursory glance at the tongue and a mere noting whether it be clean or "dirty," yellow or white, is too often all the attention this organ receives. The base of the tongue gives more information than the tip and it is necessary that the patient be told to protrude the tongue well, the surface being examined (preferably with a pocket lense) in a good light. Note size, shape and manner of protrusion. Remark whether the organ trembles or elongates and contracts. Very nervous children are unable to hold the tongue still unless their attention is distracted. Always study the tongue in the normal position and protruded.

Remember that various articles of food affect the tongue; children are particularly prone to put things in their mouth (paper, leather, pencils, crayons, etc., may easily lead to wrong conclusions) and in early life simple dietary errors are quite apt to cause a very foul tongue. Even in health the appearance of the surface of the tongue varies a good deal and a peculiar coating can rarely be accepted (certainly not alone) as indicating a certain organic disorder.

It is essential to study the anatomy of the tongue to understand properly its language; the epithelium differs in character in various parts and it must be borne in mind that different conditions will present (under similar systemic conditions) in different individuals. One washes the teeth after each meal and rinses the mouth; another never enjoys a buccal toilet. This child talks little and keeps the tongue immobile. The next has the organ in continuous motion, thus keeping the tip and sides clean through friction against the teeth and roof of mouth. Another is a "mouth-breather," and still another has decayed teeth. All these and many other facts must be considered in a study of the tongue as an aid to diagnosis.

In the typhoid state mental apathy and debility have a great deal to do with the peculiar inability to protrude the tongue even though its stiff and cracked condition would

render the act difficult. In this disease we have a fairly even "tongue picture" which differs in several respects from that present in ordinary bilious conditions. In the latter we find a broad and flabby tongue, coated uniformly with a whitish yellow or yellow paste. The edges are often freely indented from pressure against the teeth. In tonsillar affections a very similar condition will be noted, but the odor of the breath is fouler and the coat likely to be white, not yellow. The early "typhoid tongue" also resembles that of the bilious patient, the back portion being especially coated. Later we get the red tip and edges and a strip of coating along each side of the median line which is heavier towards the base. I have not seen any marked deviation from this picture in the scores of cases that have been under my observation.

Under proper treatment the tongue gradually cleans —but its *narrowness* will attract attention. Even in severe cases this feature obtains. If the disease persists, a thick brown fur will be noted on the dorsum, and the tongue becomes dry and cracked, even the edges showing fissures. At this time sordes gather about the mouth. The fissures may be deep enough to cause bleeding, which adds to the black appearance of the tongue. Later still the dead epithelium is shed and we get a fearful-looking tongue—dry, cracked, glazed and with patches of brown fur and excoriations alternating towards the back. The typhoid patient is likely to leave his tongue out till a sharp order is given to withdraw it; the organ trembles meanwhile. Withdrawal is slowly performed. In "mixed infections" we may have a tongue coated with a brown fur throughout.

In relapsing fever there is often a triangular patch of red (normal) epithelium at the tip of an otherwise thickly coated tongue.

Children who drink milk are likely to present a *white* tongue; the coating here is not as a rule pasty but

"furry." In "thrush" irregular, white patches are seen. The buccal mucosa is hot, salivation and soreness evident.

A peculiar tongue will be seen in children suffering from chronic catarrhal disorders (mucous disease). The organ is broad, flabby and bears a moist, gray coating; here and there well-defined areas of red appear, and close examination will reveal in these spots enlarged papillæ. This is the "worm-eaten" tongue of some writers. In *acute* gastric catarrh the tongue bears a light coat and numerous pin-point red spots are evident; these do not protrude above the surface.

Scrofulous children sometimes present a tongue excessively furred. A dark-gray growth of leptothrix about the center and base of the tongue (circumvallate papillæ) may lead to the suspicion of diphtheria. The absence of systemic (and other local) disorder should prevent error in diagnosis.

A red, "beefy," elongated tongue generally means gastric disorder; it will be noted also in dysentery and some hepatic engorgements; in carcinoma such a tongue is seen. The advanced tubercular patient usually shows a similar tongue. Yellow spots along the edge of the tongue may be taken to mean liver disease. A dry tongue in serious diseases is a bad symptom and the return of moisture should be hailed with relief.

Tongue in Poisoning.—In poisoning, the tongue often affords invaluable evidence—especially when the patient is a child unable to tell us what it has swallowed. Thus we shall find the tongue white and pearly in ammonia poisoning; dead white and wrinkled—shrivelled—when corrosive sublimate has been taken; in carbolic-acid poisoning the tongue may be white and puckered into ridges and folds (with shreds of tissue hanging), or brown. Later it becomes almost black, red lines surrounding the burnt areas. Oxalic acid causes the tongue to present a thick

white coat. Caustic alkaline poisons leave it shreddy, pieces of pulpified tissue coming away on the least pressure; discoloration is marked, the tongue being fiery-red, pearl-like or a grayish yellow. Cantharis causes a fiery-red mucosa and vesication, which later presents as shallow sores or ulcers. Phosphorus (matches, rat pastes, etc.) may cause the tongue to appear pasty, livid or dark-red; when matches are sucked the coloring from the head will affect the tongue; here the luminous vomit and odor of the breath (it may smell like garlic, due to the presence of volatile phosphorus compounds) are diagnostic.

Glossitis is not frequently encountered in children but occasionally we find excoriations and patches covered with macerated epithelium which persist without any visible cause. In measles, variola, erysipelas, herpes, pemphigus and eczema, eruptions may appear on the tongue; later the bullæ or vesicles may ulcerate.

A tongue with a yellow coating on its base indicates hepatic torpidity and is called by many physicians the "podophyllin tongue."

A dry, glazed tongue usually indicates gastric or enteric disease, though it is also noted in phthisis and wasting disorders. Gastritis, enteritis, peritonitis and intestinal obstruction present this peculiar dry, glazed tongue.

The "strawberry tongue" is an evidence of scarlatinal infection or ichthyosis linguæ. (Differentiation is easy of course.)

A smooth, moist red tongue generally exists in hyperacidity.

A fissured tongue is seen in diabetes, syphilis, chronic dysentery (with peculiar glazing) and in marked cases of erysipelas.

A red, swollen tongue will be noted in aneurism of the aorta, cretinism, mitral disease, variola and pemphigus. Glossitis, carcinoma of tongue and ingestion of irritant

poisons will also cause this appearance. Some cancerous patients present a "large red tongue."

A small tongue is seen in bulbar paralysis (the patient may be unable to protrude the tongue, or only one side of it) the typhic state, acute peritonitis (red and glazed), enteric fever, chronic gastritis.

A large, pale tongue, showing indentations of teeth, may be seen in anemia, gastric atony, neurasthenia, mucous disease (it is slimy), cancer and ulcer of stomach, relapsing fever, and chronic gastritis in anemic, neurasthenic patients.

A dry, furred tongue is present in ague, dyspepsia, continued fevers, the exanthemata, erysipelas, jaundice, pyemia, pneumonia, typhus, acute tuberculosis, endocarditis, lead poisoning and remittent fever.

White fur is more or less marked in alcoholism, apoplexy, hepatic disease (catarrh, gastric, biliary or enteric), colitis, constipation, erysipelas, enteric fever (down the center and early), measles, meningitis, rheumatism, acute pneumonia, lithemia, quinsy, gout, phthisis, relapsing fever, gastric irritation and migraine.

A *brown* fur is seen in severe erysipelas, third week of typhoid fever, gout, gastritis, remittent fever, jaundice, septicemia, scurvy, strangulated hernia, typhus, typhoid condition, acute tuberculosis. Any dirty tongue may assume a brown tint from coffee, cocoa, licorice, etc.

Ulcers on the tongue may mean apthæ, chancre, gastritis, epithelioma or a rough tooth; secondary and tertiary syphilis cause patches and ulcers. Ulcers on the under side of the tongue suggest "sprue."

Nodules point to actinomycosis.

A bitten tongue leads us to suspect epilepsy or hystero-epilepsy (not hysteria); a fall may cause the tongue to be severely bitten.

The tongue trembles in alcoholism, bromism, chorea, bulbar paralysis, delirium tremens, paralysis (general)

disseminated sclerosis, the typhoid condition, and often just before death.

A book could be written upon the tongue in health and disease and it presents varying aspects in different individuals with almost each departure from health.

One woman had peculiar lumbar pains; as they appeared, one side of her tongue from base to near the tip presented a narrow strip of glairy greenish white fur. The opposite side was brick-red. As the pains grew worse, the strip lengthened and deepened in color. It never touched the median line or edge. Under medication pain decreased and tongue cleaned contemporaneously. At the first sign of return the faint outline of strip on tongue could be noted. Colchicine and macrotin with a few doses of calomel cleaned up the difficulty.

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